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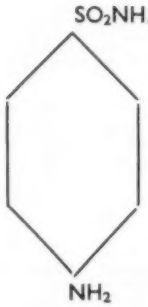

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ADDRESSES AND ORIGINAL ARTICLES

SURGICAL REVASCULARISATION OF THE HEART

THE EXPERIMENTAL BASIS

BY LAURENCE O'SHAUGHNESSY, M.D. Durh., F.R.C.S.
CONSULTANT SURGEON, LAMBETH CARDIOVASCULAR CLINIC, LONDON COUNTY COUNCIL

DAVID SLOME, M.B., Ph.D. Cape Town
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F. WATSON
CHIEF TECHNICAL ASSISTANT, BUCKSTON BROWNE RESEARCH FARM, DOWNE

(From the Buckston Browne Research Farm and the Bernhard Baron Laboratories of the Royal College of Surgeons of England)

UNLESS the organism possessed some means of natural compensation for cardiac ischæmia, occlusion of the larger coronary vessels would be fatal. The immediate mortality of coronary thrombosis is very high—in Hochrein's (1937) series of 297 cases 108 patients died in the first eight days and 48 more in the course of the first month—but many patients return to an active life, sometimes even for years, before suffering their second attack.

Exact investigation of all the possible mechanisms of defence against cardiac ischæmia is difficult, but it is at least clear that so long as the heart remains free in the pericardial sac local compensation can only be effected by such intrinsic mechanisms as intercoronary anastomoses, anastomoses between the coronary tree and the vasa vasorum of the great vessels, and possibly by means of the thebesian circulation. Only when the heart adheres to the parietal pericardium does any extrinsic reinforcement of the coronary tree become possible.

For many years the surgical treatment of cardiac ischæmia was indirect and confined to various types of neurectomy carried out for the relief of anginal pain, but recently direct operations on the heart have been carried out, and in the attempt to supplement the cardiac blood-supply vascular grafts—muscle (Beck 1935), omentum (O'Shaughnessy 1936), lung (Lezius 1937)—have been applied.

The pathological basis of these operations and their clinical application for the relief of coronary disease in man have been considered in previous papers. Here we intend to summarise the experimental evidence—there is more evidence than is generally realised—in favour of surgical revascularisation of the heart and to record some further results which have accumulated during the three years that have elapsed since our last paper dealing with experiments.

THE CORONARY COLLATERAL CIRCULATION

The existence of extracardiac anastomoses of the coronary arteries demonstrated by various early workers was reinvestigated in detail by Robertson (1930) and by Hudson, Moritz, and Wearn (1932). The latter defined clearly the origin and extent of this widespread and rich potential extracardiac coronary collateral circulation and drew attention to its probable significance in compensating for coronary sclerosis. Although the effective participation of these collaterals in the event of a sudden or rapid coronary occlusion is doubtful, it seems probable that they may at any rate operate to diminish and limit the extent of myocardial damage, more especially when the cardiac ischæmia is of gradual onset. Many cases have been recorded bearing on this point.

Gross (1921) described a heart in which the vessels of the peri-aortic and epicardial fat-pads prevented infarction from following subtotal occlusion of the circumflex branch of the right coronary artery. Campbell (1929) examined a heart in which a thrombosed area in one coronary artery was bridged by arterial telæ adiposæ so effectively that infarction did not occur in the area involved.

Details are given by Robertson of two cases illustrating the important part that may be played by these widespread anastomotic channels in preventing the usual myocardial damage produced by coronary occlusion.

Von Redwitz (1909) and Crooke (1892) reported cases of bilateral occlusion of the coronary orifices and observed a network of dilated vessels from the adventitia of aorta and pulmonary artery to the coronary vessels beyond the occluded segment.

Although it may only rarely happen that this type of collateral circulation can provide a vascular supply sufficient to compensate completely for the coronary occlusion, it may, however, be a significant factor in some cases in limiting the degree and extent of the ischæmia.

REVASCULARISATION BY CARDIOPERICARDIAL ADHESIONS

Besides these natural anastomotic channels a further possibility for the revascularisation of the heart rests in the formation of cardiopericardial adhesions, establishing connexions between the coronary vessels and the pericardial and mediastinal vessels.

Thorel (1903) described the case of a patient who showed no signs of cardiac disease in life, but in whom long-standing occlusion of both coronary arteries was found post mortem. Intrapericardial adhesions apparently provided in life an adequate blood-supply to the heart muscle.

Hudson, Moritz, and Wearn (1932) describe four cases with partial or complete pericardial obliteration by adhesions. Injected through the coronary arteries these showed in all four cases a specially rich injection of the pericardium. On microscopical examination the adhesions were found to contain injected vessels extending from the heart to the parietal pericardium.

Robertson (1935) carried out experiments on the re-establishment of cardiac circulation during progressive coronary occlusion by vessels carried in pericardial adhesions. He succeeded in obtaining continued functioning of the heart after both coronary arteries had been ligatured, the requirements of the myocardium being supplied entirely by vessels in the adhesions. Section of these adhesions led to the death of the animal.

Beck (1935), during an operation, divided a band of adhesions attached to the base of the left ventricle and observed that both sides bled briskly.

We have observed at operation on the human heart a leash of highly vascular adhesions passing from the pericardium to the margins of a circular infarcted area on the sternocostal surface of the left ventricle. Other examples of natural compensation for cardiac ischæmia by the formation of pericardial adhesions cited in the literature have been quoted in our previous papers. Beck and Tichy (1935) carried out a series of experiments in which vascular adhesions were produced between the heart and the pericardium and pericardial fat after removal of the epicardium and the lining layer of the parietal pericardium. They demonstrated that almost complete occlusion of the right and left coronary arteries was compatible with life if the heart had been provided

with a collateral blood-supply. Dye was shown to have penetrated the myocardium when injected through the collateral bed. They emphasised the importance of a pressure differential as a stimulus for the formation of collateral channels. Anastomoses between the cardiac and extracardiac circulations were demonstrable as early as two weeks after operation.

EXPERIMENTAL AUGMENTATION OF THE BLOOD-SUPPLY

The first direct operation for cardiac ischæmia was done by Leriche and Fontaine (1933), who, in a dog, excised part of an infarct following a coronary ligature and repaired the defect with a free graft of pectoral muscle. After this and as a result of the pathological studies of the development of a natural collateral circulation outlined in the previous section there appeared a series of papers on the experimental production of an additional blood-supply to the heart by grafting.

FIG. 1—Injected cardio-pericardial adhesions produced with aleuronat in a cat.

Beck and his co-workers (1936) carried out an extensive experimental study of the relief of cardiac ischæmia and provided an accessory blood-supply to the myocardium by grafting. The first series of experiments have already been mentioned in the previous section. In subsequent experiments pedicle grafts of muscle and omentum were used. They found that anastomoses developed readily between the blood-vessels of skeletal muscle and of the myocardium, provided the blood-supply of the heart had been reduced. In the absence of partial occlusion of the coronary vessels the anastomoses though present are not so well developed. They concluded "that the presence of a collateral vascular bed definitely protected the heart from the ravages of sudden occlusion of a major coronary artery." The graft acts by providing an accessory blood-supply and by affording channels of communication between branches of one coronary artery and branches of the other occluded coronary artery.

With this experimental work as a background Beck performed the first operation on the human for relief of cardiac ischæmia by attaching a pedicle graft of the pectoralis major muscle to the myocardium.

Reinhof (1935) stated in a discussion that after the application of a pedicled omental graft to the heart of the dog ligature of the left descending coronary artery failed to produce an infarct. We have not been able to find further details of his experiments.

Anrep (1936) mentions an autopsy on an Egyptian accustomed to heavy manual labour in spite of coronary disease of considerable duration. The effects of occlusion of the left coronary artery and a narrowing of the right coronary artery had apparently been compensated for by an adhesive pericarditis with the development of pericardial collateral vessels. Anrep experimented on dogs, and produced effective revascularisation by using the triangularis sterni muscle as a bridge between the mediastinal vessels and the heart. This revascularisation was more effective if some of the coronary vessels had previously been ligatured. In some of Anrep's experiments his grafted animals survived with a normal exercise-tolerance after successive ligature of both coronary arteries.

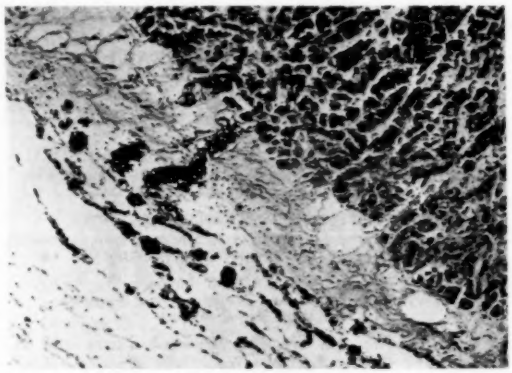

FIG. 2—Section of cardiopericardial adhesions produced with aleuronat in a man.

Lezius (1937 and 1938) studied carefully and in detail the development of a coronary collateral circulation after grafting the lung to the surface of the heart. In one group of sixteen successful experiments the lung was sutured to the surface of the heart and a 30 per cent. solution of flavine was applied as an additional stimulant to the formation of vascular adhesions. After this operation of cardiopneumopexy the left coronary artery could be ligatured, and the animals later showed a normal exercise-tolerance. At autopsy the surprising degree of revascularisation attained was demonstrated by injection of Thorotrast into the pulmonary artery. The complete filling of the coronary tree could be shown radiologically. Microscopical preparations showed the absence of any infarcted area in the heart and demonstrated the presence of large new vessels passing from the graft into the myocardium.

Lezius emphasised the importance of cardiac ischæmia as a stimulant to the development of this collateral circulation. The vascular connexions between the pulmonary and coronary circulations is slight when the coronary vessels are not ligatured. The development of functionally active anastomoses between these two organs follows rapidly on ligature of a main coronary vessel. The importance of the accessory supply after cardiopneumopexy was demonstrated by the fact that in an animal in which the

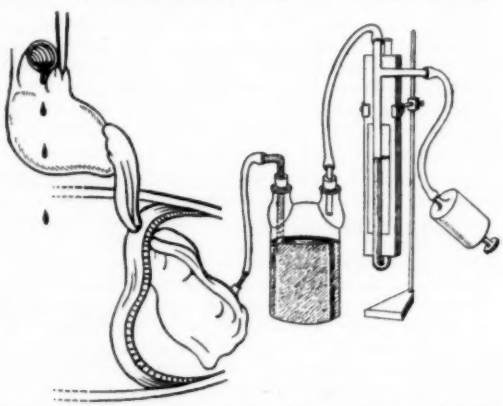

FIG. 3—Method of injection of coronary tree through abdominal aorta and omental graft in a cat.

left coronary artery had been ligated after grafting of the lung subsequent ligature of the bronchus of the grafted lobe killed the animal. This he attributed to the absence of oxygenation in the atelectatic lobe. Lezius further demonstrated that the supplemental blood-supply to the myocardium provided by grafting the lobe of the lung on to the heart was sufficient to enable ligature of both right and left coronary arteries to be tolerated.

Grassi (1937) performed experiments on rabbits in which grafts of pectoral muscle and omentum were applied to the heart together with ligature of one or more coronary arteries. He confirmed the formation of vascular connexions between muscle grafts and the heart and the absence of degenerative changes in the myocardium.

In a series of publications O'Shaughnessy (1936) has reported a detailed experimental investigation of the methods of augmenting the blood-supply to the heart. He showed in the greyhound that an omental graft was compatible with the highest degree of physical exertion, and that vascular connexions developed rapidly between such a graft and the myocardium. New vessels can be seen in microscopical preparations one week after grafting, and after three weeks complete injection of the coronary tree can be carried out from the arterial bed of the graft. He used a pedicled omental graft

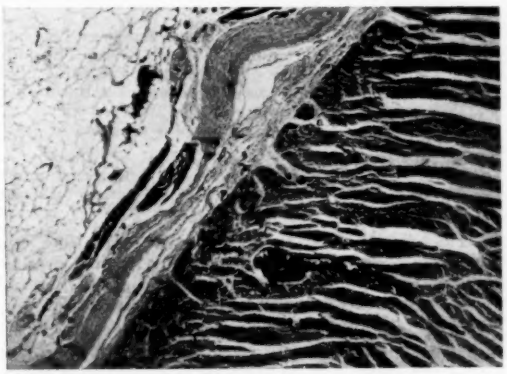

FIG. 4—Section of myocardium showing filling of coronary vessels by injection through omental graft.

brought up into the chest in the manner he devised for œsophageal resection (1933).

In recent specimens a suspension of indian ink was used as the injection mass; but, as the graft matured, vascular continuity could be demonstrated by heavier materials, such as starch and gelatin. In a greyhound killed eighteen months after cardio-omentopexy the coronary tree could be completely filled by injection of a barium sulphate paste through the graft.

In these experiments it was shown that the omentum would form vascular attachments when it was applied to normal myocardium, an area of acute ischæmia, or an area of chronic ischæmia. It must also be emphasised that blood reaching the heart from the graft is not merely distributed locally but is also available throughout the heart in virtue of the connexions between the graft and branches of the right and left coronary arteries. This additional supply from omental vessels was always supplemented by connexions which became established between the vessels of the omentum and the mediastinal vessels.

The application of this experimental work to the problem of surgical revascularisation of the ischæmic

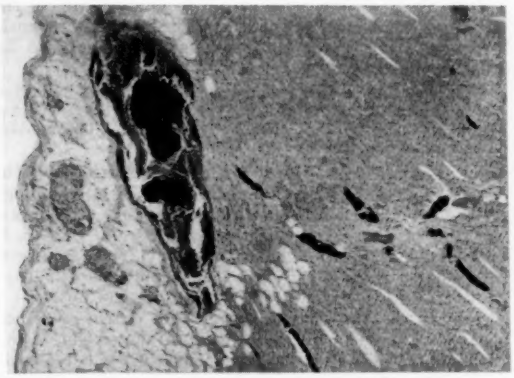

FIG. 5—Section showing coronary artery filled by injection through omental graft on to aleuronat adhesion.

heart in man by the operation of cardio-omentopexy and other operative procedures elaborated on the bases of this experimental work has been attended by success in many apparently hopeless cases. Patients operated on two and a half years ago are still active, but naturally a longer period of observation is needed for final assessment of the clinical value of this new operation.

Experiments

In the experiments described in this paper dogs and cats were used and all the operations were performed under full general anæsthesia.

Ether was the anæsthetic medium, preceded in the operations on dogs by heavy doses of morphia—gr. ½ per kg. of body-weight. The heart was exposed by the left transpleural route, while full inflation of the lungs was maintained by oxygen given under positive pressure in a Tigel-Henle anæsthetic apparatus. The incision was in the fifth or sixth intercostal space, and the wound was closed by pericostal sutures, a single continuous suture for the muscles of the chest wall, and a series of interrupted sutures for the skin.

In all the experiments an extracardiac collateral circulation has been established between vascular parietal structures and a normal myocardium. This is of special importance because of recent claims that such vascular connexions are only likely to form in relation to a localised area of cardiac ischæmia.

The experiments fall into four groups and in each group one or more typical experiments are detailed.

PRODUCTION OF ALEURONAT ADHESIONS

Aleuronat.—Organised granules are found in the seed cells of most plants. They are especially prominent in the cereals and have been termed aleurone granules. Aleuronat is a preparation of aleurone and consists of a crystalloid component and a globoid component which contains minute traces of Ca, Mg, and H_3PO_4. It was used by O'Shaughnessy in 1929 as an agent to produce pleural adhesions, but it had been used much earlier by Coenen in 1901 for a similar purpose. Aleuronat does not occasion any general systemic disturbance, for it is not absorbed into the circulation; it produces a more certain local reaction than iodine or similar irritants and has a less drastic effect on endothelium than have drugs of the flavine group. We are indebted to Mr. H. Roberts, chief technical assistant in the surgical unit of University College, for the compounding of a suitable preparation which may be easily manipu-

lated in a strong syringe. The composition of the paste is aleuronat 5 parts, starch 10 parts, glycerin 75 parts, and water 10 parts, and it is sterilised for use by autoclave.*

EXPERIMENT.—Cat. Pericardiotomy and insertion of a small quantity of aleuronat paste. Pericardium and parietal wound closed by suture. Uneventful convalescence.

The animal was killed six months later, and the heart together with the pericardium was removed. The fibrous pericardium was then incised at the base of the heart and turned downwards until its only attachment to the heart was by the aleuronat adhesions. An injection of a suspension of indian ink was made into the aorta towards the heart at a pressure of 120 mm. Hg, and the entire specimen was then fixed in formalin. Fig. 1 shows the vessels in the parietal pericardium filled with the injection mass and the delicate adhesions between the sac and the epicardium containing the vessels which provided a new connexion between the coronary and pericardial vessels.

We have also observed the supple and vascular nature of aleuronat adhesions in some of our operated patients even after the lapse of several years. Fig. 2 shows the vascularity of aleuronat adhesions in the human pericardium three months after the application of aleuronat. The adhesions associated with the now well-recognised syndrome of inflow stasis due to chronic constrictive pericarditis are tough, unyielding, and avascular.

These observations show that aleuronat produces a sufficient reaction of the epicardium to permit the incursion of new vessels without the previous destruction of the membrane.

FIXATION OF A GRAFT WITH ALEURONAT PASTE

EXPERIMENT.—Cat. Operation on March 19, 1937. The pericardium was opened in the usual way, and after incision of the diaphragm a pedicled omental graft was brought up into the chest. The surface of the heart and the graft were smeared with a small quantity of aleuronat paste, and the graft was sutured to the cut edges of the pericardium. No sutures were passed between the omentum and the heart.

On April 1, 1938, the animal was killed. All the attachments of the heart were cut across until the organ could be suspended on a hook with the graft on its sole remaining attachment (fig. 3). A suspension of indian ink was injected into the abdominal aorta at a pressure of 120 mm. Hg, and the coronary tree was completely filled. Fig. 4 shows the injection mass in the graft and in the coronary vessels.

This experiment is of clinical importance because we found early in our operations on human beings that the insertion of a suture into a friable and degenerate myocardium was dangerous and sometimes fatal.

* The aleuronat we use at the Lambeth Hospital is supplied by Baird and Tatlock (London) Ltd., 14, Cross Street, E.C.1.

FIG. 6—Cardiopneumopexy (Lezius). Radiogram of heart and left lower lobe of lung of a cat showing filling of vessels of lobe by injection of thorotrast into cavity of heart.

GRAFTING ON TO ALEURONAT ADHESIONS

EXPERIMENT.—Cat. Aleuronat was inserted into the pericardium on Aug. 6, 1936. A second operation was done on Nov. 13, 1936, and a pedicled omental graft was sutured to the intact and adherent pericardium.

FIG. 7—Cardiopneumopexy (Lezius). Radiogram of heart and left lower lobe of lung of a dog showing filling of coronary vessels by injection of thorotrast into pulmonary artery. Note cannula in pulmonary artery.

The animal was killed on Aug. 21, 1937, and injection carried out in the usual way. The coronary tree was completely filled with the injected material. Fig. 5 shows the circumflex branch of the left coronary artery containing the injected material.

This finding is also of clinical importance, for it is sometimes desirable to apply the graft to an adherent pericardium, because its separation may entail the loss of already vascularised collateral vessels. We have also to face the possibility that some of our patients already revascularised by aleuronat may require further revascularisation at a later date, and it was essential for us to know that this could be achieved through an intact pericardium.

CARDIOPNEUMOPEXY (LEZIUS)

EXPERIMENT.—Cat. Cardiopneumopexy performed on June 15, 1937. The pericardium was opened widely, and after mobilisation of the lower lobe of the left lung it was sutured to the anterior cut edge of the pericardium. Aleuronat paste was applied to the surface of the heart. The phrenic nerve was left intact. Recovery was uneventful.

The animal was killed on April 4, 1938, and the lung graft was found firmly adherent to the heart. The heart and the lungs were removed from the chest, and the right lung and the upper lobe of the left lung were excised, leaving the left lower lobe attached only by adhesions to the heart. Thorotrast was injected into the cavity of the heart through the aorta, and the radiogram (fig. 6) shows complete filling of the vessels of the lobe.

EXPERIMENT.—Dog. Cardiopneumopexy performed on Jan. 1, 1938, as in experiment just described.

The animal was killed on April 9, 1938, and the lower lobe was found to be firmly adherent to the heart. The specimen was prepared as in the corresponding experiment on the cat, but the thorotrast was injected into the pulmonary artery. The radiogram (fig. 7) shows that under these conditions filling of the coronary vessels could be obtained.

Summary

Histological and injection studies are presented, demonstrating that vascular connexions will develop between the vessels of the myocardium and extracardiac vessels (*a*) when cardiopericardial adhesions are produced with aleuronat; (*b*) when a pedicled omental graft is introduced into the pericardial sac and adhesion between omentum and heart is stimulated with aleuronat; and (*c*) when omentum is grafted to the outer surface of the pericardium after the production of cardiopericardial adhesions.

Collateral communication will develop between the pulmonary and coronary circulations if a lobe of the lung is grafted to the myocardium.

One of us (L. O'S.) wishes to record his debt to the Medical Research Council for scientific and financial assistance.

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CANCER OF THE ALIMENTARY TRACT

ITS PATHOGENESIS AND ITS PROPHYLAXIS

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(*Concluded from p. 558*)

II—Carcinoma of the Œsophagus

THE UPPER ŒSOPHAGUS

IN discussing the ætiology of carcinoma of the œsophagus it is necessary to consider separately those cases in which the upper extremity in the neighbourhood of the pharyngo-œsophageal sphincter is involved. Strictly speaking, this condition is not a growth of the œsophagus, for it always begins in the postcricoid part of the pharynx, though it ultimately extends to the mouth of the œsophagus. As Trotter and Waggett independently pointed out in 1913, epithelioma in this position occurs almost exclusively in women, in striking contrast with the disease in the region immediately proximal to it and in the rest of the œsophagus, where it is fairly common in men but very rare in women. This curious sex-distribution is probably due to the fact that epithelioma in the postcricoid region is the result of malignant degeneration of the atrophic mucous membrane, which is present in the pharynx as well as the tongue in the so-called Plummer-Vinson syndrome, a condition occurring in women between the ages of 30 and 50 but almost unknown in men. Paterson, who described this syndrome of upper dysphagia with anæmia in 1906, eight years before Plummer and fifteen years before Vinson, pointed out in 1919 that it may be followed by carcinoma. Already in 1913 Trotter had observed that women with cancer of the mouth of the œsophagus often gave a long history of dysphagia preceding the onset of malignant disease. In a series of papers published between 1929 and 1937 Wassink of Amsterdam again referred to the frequency with which a long history of dysphagia is obtained in women with epithelioma of the upper end of the œsophagus, and at the same time drew attention to its association with atrophy of the mucous membrane of the tongue and pharynx, cracks at the angles of a stiff and narrow mouth, loss of teeth, and spoon-shaped brittle nails, all of which are characteristic features of the upper dysphagia with anæmia syndrome. Ahlbom of Stockholm (1936) found that of 153 women with cancer of the buccal cavity and upper end of the œsophagus, 99, or 65 per cent., had suffered from "idiopathic hypochromic anæmia" with or without upper dysphagia for five to twenty years before the onset of malignant disease.

MIDDLE AND LOWER ŒSOPHAGUS

In the act of deglutition food is conveyed rapidly down the œsophagus by peristalsis till it reaches the closed cardiac sphincter. The sphincter then relaxes and the food passes into the stomach, but even with full relaxation the lumen of the sphincter is less than that of the rest of the œsophagus; hence there is an appreciable delay in the passage through the lowest two inches. This explains why the stricture which follows the swallowing of corrosive poisons is always most severe in the lower end of the œsophagus. Similarly any less violent irritant which may be swallowed is in contact longest with the mucous membrane of the last two inches of the œsophagus. This doubtless explains why the commonest situation of carcinoma is at the extreme lower end of the œsophagus. The next most frequent position is

opposite the bifurcation of the trachea, where the passage of food is slower than immediately above and below owing to the anatomical narrowing which occurs in this situation.

Whereas carcinoma of the stomach and colon is no commoner in males than in females if allowance be made for the frequency of cancer of the breast and uterus in women, this is not the case in the middle and lower end of the œsophagus, where cancer is rarely found in women. This can only be due to a sexual difference in the extrinsic causes, the most important of which are probably tobacco and alcohol, both of which must exert a much more concentrated action on the mucous membrane of the œsophagus than of the stomach, for the former is always empty, whereas the irritant is diluted by food and gastric juice in the stomach. Lamy (1910) found a history of alcoholism in 80 per cent. of 134 patients and Samaja in 80 per cent. of 106 patients with cancer of the œsophagus. The effect of alcohol is also shown in table IX, from which it is clear that the incidence of carcinoma of the œsophagus is more than four times greater in the alcohol trades than in the general population, whereas in carcinoma of the stomach the difference is much less obvious and there is no difference at all in carcinoma of the colon. From 1930 to 1934 the consumption of spirits and beer per head of the population in Holland was less than half that in Great Britain (Shaly 1937). This may explain why cancer of the œsophagus is relatively commoner in England than in Holland in contrast with cancer of the stomach, which has only a slightly higher incidence in the alcohol trades but is much commoner than in Holland for reasons already given.

TABLE IX—INCIDENCE OF CARCINOMA OF THE ŒSOPHAGUS, STOMACH, AND INTESTINES IN ALCOHOL TRADES AND CLERGY COMPARED WITH THAT IN ALL MALES RECKONED AS 1000 (1921–23). FROM THE REGISTRAR-GENERAL'S DECENNIAL SUPPL., 1927

—	Œsophagus	Stomach	Intestines and rectum
All males	1000	1000	1000
Barmen	4289	1881	1031
Cellarmen	4577	885	—
Waiters	4082	1871	756
Anglican clergymen ..	175	590	—
Roman Catholic priests ..	1144	315	—
Ministers of other religious denominations	237	468	—

Whereas the malignant degeneration of the atrophic mucous membrane in upper dysphagia with anæmia develops comparatively rapidly, malignant degeneration of the chronically inflamed mucous membrane in other parts of the œsophagus occurs only after the irritation has been continued for many years. This is shown by the fact that the incidence of postcricoid carcinoma in women is greatest between the ages of 30 and 50, whereas that of carcinoma in the middle and lower œsophagus is greatest between the ages of 50 and 70 (Turner 1920).

Achalasia of the cardia and carcinoma of the œsophagus.—In achalasia of the cardia the mixture of stagnating food and saliva within the dilated œsophagus becomes readily infected, and the irritating products of fermentation and putrefaction cause œsophagitis, which may be accompanied by superficial ulceration of the mucosa. The ulcers may heal and lead in turn to epithelial hyperplasia with the production of leucoplakia and small wart-like nodules, from which a squamous-celled carcinoma may arise. The occurrence of carcinoma within a dilated œsophagus in a man of 84, who had had difficulty in swallowing for over forty years, was described and illustrated by Hilton Fagge in 1872. Other similar cases have been described by eleven French and four German authors quoted by Sargnon (1938), and in 1926 Rake and I observed one in a man of 69, who had had symptoms of achalasia of the cardia for 35 years.

We also described (1930) the case of a man of 43 who was admitted to hospital in the last stages of malignant cachexia. He gave a history of difficulty in swallowing for many years. Secondary nodules of carcinoma were felt in the right tibia, but the primary tumour was not discovered before death, which occurred four days after admission. At autopsy a greatly dilated œsophagus was found without any organic obstruction and with no hypertrophy of the cardiac sphincter. It contained quantities of decomposing food debris. The mucous membrane was severely inflamed and had many epithelial warts scattered over its surface, one of which had become malignant.

PROPHYLAXIS OF CANCER OF THE ŒSOPHAGUS

The anæmia of "upper dysphagia" responds very well to treatment with iron in large doses. The passage of a mercury bougie or an œsophagoscope overcomes the dysphagia, so that it becomes possible to take an adequate diet. Within a short period the atrophic glossitis and pharyngitis disappear and the cracks at the corners of the mouth are healed. Waldenstrom (1938) has shown that large doses of iron with no other treatment cause all symptoms to disappear, even if there is no anæmia, the trophic changes in the mucous membrane of the tongue and pharynx (and the resulting dysphagia) as well as in the skin round the mouth and in the nails being apparently the result of a special form of iron deficiency. There is no record of a case of idiopathic hypochromic anæmia with upper dysphagia which has been adequately treated developing cancer; hence its early recognition and treatment can be regarded as one of the most striking examples of true cancer prophylaxis.

For many reasons excessive consumption of strong alcoholic drinks and excessive smoking, especially of strong tobacco, should be avoided. Not the least important is the possibility that when continued over long periods they may act as exciting causes of cancer. Since the effect of the irritation is cumulative, it is never too late to advise an alteration in habits, for the chronic œsophagitis which results from long-continued irritation disappears when the irritants are no longer present.

III—Cancer of the Colon*

INCIDENCE

Whereas the incidence of cancer of the stomach in the very poor is over double that in the well-to-do, the incidence of carcinoma of the colon, including the rectum, is approximately the same in all classes (table I on p. 553). It is considerably higher in men than in women, but if cancer of the breast and uterus be excluded no appreciable difference remains. Moreover the percentage of cases of cancer of the alimentary tract and pancreas in which the colon is involved is approximately the same in men and in women: thus the colon accounted for 40 per cent. of 262 cases of carcinoma of the alimentary tract and pancreas at New Lodge Clinic and Ruthin Castle in men and for 44 per cent. of 101 cases in women. The colon

* The term colon is used in this section to include the rectum.

is involved in a considerably higher percentage of all cancer cases in Great Britain than in most other countries (tables II and III on p. 553), but this is due to the low incidence of cancer of the stomach, for, if this be excluded, cancer involves the colon in about the same proportion of cases in Great Britain as in other countries. It is clear therefore that, if allowance be made for the special tendency of women to develop cancer of the breast and uterus and for the low incidence of cancer of the stomach in Great Britain, there is no special liability in any social class, in either sex, or in any country for cancer of the colon to develop. This indicates that the development of cancer in the colon, unlike that of the œsophagus and stomach, depends on intrinsic causes alone. This is not surprising, for the mechanical, chemical, and thermal irritants, which act as exciting causes of the precancerous disorders of the œsophagus and stomach, are no longer effective after they have passed the ileocæcal sphincter. Mechanical irritants have been softened and broken up, chemical irritants have been diluted, and the temperature of very hot and very cold food and drink has been brought to that of the body. Most of this occurs in the stomach, but the process of softening and dilution continues in the small intestine, in which the most important chemical irritants, such as alcohol, are absorbed.

DISTRIBUTION THROUGH THE COLON

There is a remarkable difference in the incidence of cancer in different parts of the colon; this is shown in table X, which has been drawn up by combining the figures given by different British, American, and continental authorities, all of which agree fairly closely with each other. The differences are probably due to the varying functions of different segments of the colon. The high incidence in the pelvic

TABLE X—PERCENTAGE INCIDENCE OF CARCINOMA IN DIFFERENT PARTS OF THE LARGE INTESTINE

Large intestine, excluding rectum			Rectum, excluding rest of large intestine	Whole of colon, including rectum
Cæcum	15	25		25
Ascending colon	10			
Hepatic flexure	5	50		
Transverse colon	5			
Splenic flexure	10			
Descending and iliac colon	5			
Pelvic colon		50		25
Pelvirectal flexure			65	50
Ampulla of rectum			30	
Anal canal			5	
Total		100	100	100

colon and rectum, compared with that in the more proximal parts, may be associated with the fact that their contents are more solid and consequently cause more mechanical irritation. The cæcum and ascending colon are affected relatively often, because they are more constantly filled than any other part of the large intestine except the pelvic colon and are subjected to irritation by the products of bacterial activity, which is greater in them than in any other part of the alimentary tract. The transverse and descending colons are comparatively rarely affected, for in most people they are empty during the greater part of the day, acting simply as a tube connecting the proximal colon, in which fluid is absorbed from the fæces, and the distal colon, in which the fæces are stored and still more water is absorbed until the time comes for expelling them. The splenic flexure is involved as frequently as the whole transverse colon and descending colon together on account of the acuteness of the angle it forms compared with the obtuse angle of the hepatic flexure; this results in increased friction when fæces are conveyed by mass peristalsis from the proximal to the distal part of the colon. The pelvirectal flexure is the commonest of all situations, for it is the point at which the onward passage of fæces brought from the proximal colon is normally arrested, and it is therefore in contact with hard fæces for longer periods than is the rest of the pelvic colon; moreover it forms a very acute angle and is subjected to a considerable degree of friction during defæcation. The rectum is less frequently involved than the pelvic colon or pelvirectal flexure because it is only in contact with hard fæces for a few seconds each day during defæcation, except in people with dyschezia—i.e., constipation resulting from inefficient defæcation. It seems likely that dyschezia, which is exceedingly common, would predispose to cancer of the ampulla, but I know of no evidence for or against this possibility.

PRECANCEROUS CONDITIONS OF THE COLON

Adenomata.—The pathological investigations of Dukes (1925, 1932) in association with the surgeons of St. Mark's Hospital for Diseases of the Rectum, especially Lockhart-Mummery (1928, 1935) and Gordon-Watson (1938), have shown that carcinoma of the colon, including the rectum, is generally the result of malignant degeneration of simple adenomata. This work has been confirmed especially by R. Bensaude and his assistants (A. Bensaude and others) in France, Schmieden and Westhues in Germany (1927), and Rankin, Bargen, and Buie in America (1934). Simple adenomata of the colon apparently form as the result of an inborn tendency for groups of cells of the epithelium to undergo hyperplasia, especially in those parts which are most exposed to irritation (Dukes 1925). They are never congenital but often develop in childhood, and new adenomata may continue to form throughout life. A single adenoma may be present at a time, but any number may occur together, and in extreme cases the whole of the colon may be covered with innumerable polypi, the condition being then known as polyposis or adenomatosis coli. The tendency to develop polypi is often familial.

In 1914 I published an account of three children in a family of four, each with a single rectal polyp. I had no opportunity of seeing the eldest, a boy of 17, but he had suffered for several months between the ages of 1 and 2 from severe rectal hæmorrhage, from which he nearly died. There had been no recurrence, but it seems likely that he too had a polyp.

The second boy, aged 13, had pain on defæcation and passed a little blood twice in 1910. His mother brought him to see me in November, 1913, for she thought his symptoms had been like those of his younger brother and sister, who had already had polypi removed, although he had been well since 1910. I removed a small polyp from his rectum.

The third child, a girl aged 12, had been in Guy's Hospital twice in 1906 for severe rectal hæmorrhage, which recurred in 1912, when I found and removed a rectal polyp.

The youngest child, a boy of 8, passed blood and mucus in 1913, and I removed a single polyp from his rectum.

There had been no return of symptoms when I last saw the children in May, 1914. I sigmoidoscoped both parents, but neither had a polyp.

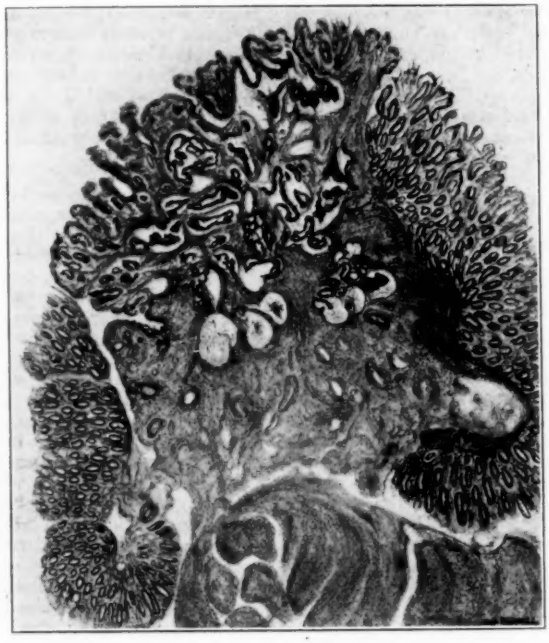
In September, 1919, A. B., aged 53, consulted me on account of discomfort, which I thought was probably caused by an early growth in his hepatic flexure. There was no palpable tumour, radiography after an opaque meal and enema showed nothing abnormal, and the stools contained no occult blood.

A diagnosis of "irritable colon" was therefore made, and the patient recovered with suitable treatment.

In March, 1925, C. B., aged 61, brother of A. B., came to the Clinic with almost identical symptoms. I expected to find that he too had an irritable colon, but further investigations revealed the presence of a growth in his hepatic flexure, which was excised the following week.

In August, 1928, A. B. came to the Clinic with a recurrence of the symptoms he had had nine years earlier; he had been completely well in the interval. Investigations now showed the presence of a growth in the hepatic flexure, which was subsequently excised.

It seems probable that both of the brothers had an adenoma of the hepatic flexure. In 1919 A. B.'s was still simple and may have given rise to symptoms by producing a temporary intussusception. By 1928 it had undergone malignant degeneration. Meanwhile C. B., without any preliminary symptoms, developed carcinoma from an adenoma in the same situation.



Adenoma of rectum becoming malignant

In early cases of carcinoma of the colon the adenomatous origin is often obvious. Cain found evidence of malignant degeneration in 16 out of 68, or 23 per cent., of solitary adenomata removed from the rectum and pelvic colon at the Hôpital St. Antoine in Paris between 1920 and 1937 (Bensaude). Schmieden and Westhues (1927) found simple adenomatous tissue in some part of the tumour in 15 per cent. of their cases of cancer of the rectum removed by operation.

In 1931 a woman of 59 was under my care with familial telangiectasia and epistaxis. Thinking that it would be of interest to see if any telangiectases were present in the mucous membrane of her rectum and pelvic colon I sigmoidoscoped her, although she had never had any intestinal symptoms or passed blood or mucus in her stools. There were no telangiectases, but a polyp, ½ in. in diameter, was found in her rectum. Although it looked and felt like a simple adenoma, microscopical examination by Dr. Cuthbert Dukes after its removal by Sir Charles Gordon-Watson showed definite malignant changes at its apex; the malignant cells had broken through the muscularis mucosæ and begun to invade the submucosa, but they did not extend to a greater depth (see figure). Four years later a local recurrence took place, and soon afterwards she died with secondary deposits in the liver.

Stewart (1931) has investigated the incidence of intestinal polypi in autopsies performed at the Leeds General Infirmary. From 1910 to 1921 the incidence was only 0·29 per cent. and from 1922 to 1928 0·67, but from the beginning of 1929 to May, 1931, during which period a much more detailed study of the colon was made in every case, it rose to 4·19 per cent. of 1815 autopsies. It is clear that only the records of the third period can be regarded as reliable, and it is probable that the true incidence is even higher than these would indicate. During the same period there were 79 cases of carcinoma of the colon. Polypi and carcinomata were present together in 21 cases, or 28 per cent., of the colons with polyps and 26·6 per cent. of those with carcinoma. In 75 per cent. of 33 specimens of carcinoma of the rectum and pelvic colon removed by operation Dukes (1925) found that one or more simple adenomata or minute hyperplastic nodules were also present. Schmieden and Westhues (1927) found a similar coexistence in 45 per cent. of their cases and Bensaude (1938) in 27 out of 95 cases.

After one adenoma has been removed others continue to form, and from any one of these a carcinoma may develop. Thus in 24 out of 50 cases in which Lockhart-Mummery (1935) had removed a polyp another tumour subsequently developed in a different part of the rectum or pelvic colon, and of these 11 were malignant. In 13 cases adenomata developed more than once in different sites; 4 patients had 9, 8, 7, and 6 adenomata in 8, 15, 6, and 14 years respectively. A local recurrence of a growth after excision of the colon or rectum for cancer is probably more often due to malignant degeneration of a new or coexisting adenoma than to the further development of malignant tissue left at the time of the operation.

The fact that polyps are so frequently multiple explains why two or more carcinomata develop simultaneously or in sequence much more frequently in the colon than in any other organ. Gabriel (1937) found 8 double cancers of the rectum or the rectum and pelvic colon in 100 consecutive excisions, and many cases have been recorded in which two or even three independent carcinomata of the colon coexisted with numerous simple polypi (Stewart 1931, Abel 1929, Norbury 1930, Morgan 1938).

Simple adenomata are much more evenly distributed through the colon than are carcinomata. Thus in 23 per cent. of 103 colons in which they were found at autopsy the cæcum and ascending colon were involved, in 35 per cent. the transverse and descending colon, and in only 44 per cent. the pelvic colon and rectum (Klemperer 1938), compared with approximately 12 per cent., 12 per cent., and 75 per cent. for these regions respectively for carcinoma. These differences emphasise the probable importance of different degrees of local irritation in the formation of simple adenomata (Dukes 1925) and still more in their conversion into carcinomata, as I have already discussed.

The rare villous papillomata of the rectum are even more likely to undergo malignant degeneration than are ordinary adenomata. Thus 45 per cent. of Bensaude's cases developed carcinoma, and Dukes found that about 10 per cent. of rectal growths removed by operation showed definite evidence of having developed on a pre-existing villous papilloma (Gabriel 1937).

Adenomatosis coli is a disease which is often familial and inherited and in which the whole or greater part of the colon is covered with innumerable adenomatous polypi, one or more of which sooner or later generally becomes malignant, often at a comparatively early age, with the result that the families tend to die out, as shown by the family trees published by Lockhart-Mummery and Dukes (1928), Dukes (1930), and others. Carcinoma was present in 62 per cent. of the 29 Mayo Clinic cases, and in 25 per cent. multiple carcinomata were found (Coffey 1938). No clear dividing line can, however, be drawn between adenomatosis coli, disseminated colonic polypi in which two or more adenomata are present, and single adenomata. The two latter, it is true, are generally non-familial, and the tendency to malignant degeneration is less than in the former. But there was no family history of adenomatosis or cancer of the colon in 65·5 per cent. of the 29 Mayo Clinic cases (Coffey 1938) and in the three which have been under my care, and disseminated adenomata and even single polypi, as in the four cases in one family already mentioned, may be familial. Malignant degeneration is less frequent in single and disseminated multiple polypi than in adenomatosis, but this may be due to the fact that in the latter the chances of malignant degeneration are increased a thousandfold by the enormous number of adenomata, any one of which may become malignant. Moreover in four generations of a family described by Lockhart-Mummery (1935) there were six certain and one probable deaths from cancer of the colon and only two cases of adenomatosis coli. In another family the father and seven out of nine children died of cancer of the rectum, and it was not until the third generation that adenomatosis occurred in four individuals. Similar family histories have been recorded by Jungling (1928) and by Rankin, Bargen, and Buie (1934).

Ulcerative colitis.—Carcinoma may develop as a complication of the polyposis which frequently develops in the process of healing in very chronic ulcerative colitis. Most of the polyps are composed of mucous membrane covering inflammatory and granulation tissue, but a minority are true adenomata; this has been proved by microscopical examinations in several of my cases and at the Mayo Clinic. Polyposis occurred in 10 per cent. and malignant degeneration in 2 per cent. of the Mayo Clinic series of 693 cases of ulcerative colitis; many of the latter were in young individuals, and the carcinoma was always of a high degree of malignancy. I have seen 3 such cases, though none occurred in the New Lodge Clinic series of 66 cases of ulcerative colitis, in which the incidence of polyposis was 12·5 per cent. (Hurst 1935). In one of my cases, a woman of 50, who had been ill for several years, active ulcerative colitis, polyposis, and a carcinoma of the rectum were all present together when I first saw her, a fortnight before her death from exhaustion.

Diverticulitis might be expected to predispose to cancer, but statistics show that the incidence of carcinoma as a complication of diverticulitis of the colon is no greater than in the general population. Thus in a review of the Mayo Clinic records, including 1800 cases of diverticulosis, of which 625 showed diverticulitis and 19 carcinoma, and 1600 cases of carcinoma coli, of which 19 showed evidence of diverticulitis, there was only one case in which there was good evidence that the carcinoma developed on an inflamed diverticulum (Fallow 1930). The smaller clinical statistics of Spriggs from Ruthin Castle (1937) and ours from New Lodge Clinic and Stewart's post-mortem statistics (1931) confirm the view that diverticulitis does not predispose to the development of cancer of the colon.

Megacolon.—In one out of my 30 cases of megacolon a carcinoma had developed in the dilated colon. This was in a man of 64. A similar association was observed in a single case by R. Bensaude (1926). This is analogous to the occasional development of cancer in megacesophagus to which I have already referred.

PROPHYLAXIS

The prophylaxis of carcinoma of the colon consists mainly in the diagnosis and removal of polypi. It is still insufficiently recognised how frequently a polyp leads to the passage of bright blood per anum. It is the cause in almost all cases in children and in the majority of young adults, but at all ages a proctoscopic as well as a digital examination should be made before diagnosing hæmorrhoids as the cause of bleeding. Lockhart-Mummery (1935) has made the wise suggestion that any patient who has once developed a polyp of the rectum or pelvic colon should be examined every four months until no new one has appeared for five years, so that each new one can be removed or destroyed as soon as it develops. A carcinoma developed only once when this was done in his series of 50 cases, and in that case the original adenoma was in the rectum and the later one, which became malignant, was in the pelvic colon out of reach of the sigmoidoscope.

Polyposis should be treated by colectomy as soon as it is recognised. The ileum should be joined to the pelvic colon as near to the pelvirectal flexure as possible. It is then possible to destroy gradually all the polypi in the rectum and remaining portion of the pelvic colon by diathermy cautery through a proctoscope and sigmoidoscope. This treatment proved very satisfactory in two out of my three cases in which it was done. The near relations of a patient with polyposis should be examined, if possible, so that any accessible polypi can be recognised and destroyed even if they have so far given rise to no symptoms. The polyposis following ulcerative colitis calls for similar treatment. In a few cases I have observed the disappearance of the polypi after the application of deep X rays; so this treatment should be tried before resorting to colectomy, but only if all active colitis has disappeared.

It seems probable that chronic irritation of the colon is a factor in the development of carcinoma from simple adenomatous polyps and possibly also in the development of the latter. It should therefore be remembered that constipation leads to far less irritation of the colon than do the purgatives which are commonly employed in its treatment. Re-education of the normal defæcation reflex, a suitable diet, and, when necessary, the administration of liquid paraffin and an unirritating vegetable mucilage, such as coreine or isogel, will cure the large majority of cases of constipation.

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ORGANIC PSYCHOSES IN CHILDREN *

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MY object in choosing the problem of organic psychoses in children is twofold. First, I think a study of the organic deteriorations is valuable in focusing attention on symptoms which are common to any deteriorating process in childhood. Secondly, I hope to provoke a discussion as to delimitation and demarcation, which should help to clarify our conceptions of schizophrenia in childhood. By this, I do not want to seem to assume that psychosis in childhood means schizophrenia, apart from the organic group; but I do not propose to include manic-depressive cases in this discussion, since they are certainly rare in childhood. Besides, those cases which have been described show so many schizophrenic features that we might get no further than trying to decide whether or not manic-depressive psychoses can be distinguished in childhood.

SYMPTOMS

Certain symptoms occur more often in the psychoses of childhood than in those of adults. This is understandable when it is borne in mind that we are dealing with a profound and usually irreversible morbid process in an organism which is still in a state of undetermined growth. Certain aspects of character and training are recently inculcated; others have as yet not made their appearance. For instance, no case of real delusional formation has been reported in a psychosis in a child under 6 years of age, whereas it is common in the adult. What can be picked out from available material and reported cases as early symptoms characteristic of the juvenile case?

Lutz (1937) gives a very comprehensive summary of all the reported cases of authenticated juvenile schizophrenics and adds cases of his own. He points out how similar are the early changes in the organic group, in which the physical interference with function appears to be responsible for the clinical picture. He instances as the essential feature the severe and irreversible disturbance in the child's relationship with and attachment to its environment. It is as if the rootedness to reality undergoes a profound change, with the result that in its place grows up an increase in self-centredness or what may be shown as an over-concentration in the world of fantasy. (I am not sure how far I hold with this as a universal concept, for many juvenile cases show a rather characteristically weak attachment to anything—i.e., apathy rather than preoccupation.) No-one would mistake the importance and vividness of fantasy-life to the normal child. What is abnormal is the "Mary Rose" quality of the compelling interest away from reality.

Secondly, Lutz instances the frequency of early disturbance of speech. This is in sharp contrast to the frequency of this symptom as a *late* manifestation in the profound dementias in adults. (The early involvement of the speech mechanism in G.P.I. is a symptom of a different order.) The point is that in childhood speech is not stabilised before the second year or later and is then still developing. It tends therefore to suffer out of proportion in childhood psychoses in comparison with adult psychoses. This symptom is worth observing carefully because of its value in differential diagnosis. Thus the meaningless repetition of words, the tendency to mimic and repeat what is said, and the various forms of mutism shown by children who are emotionally disturbed take on a graver significance when these symptoms accompany others suggesting a psychosis, especially when they persist and become an integral part of the child's abnormal behaviour.

Certain emotional responses tend to stand out in psychotic children. Some of these strongly suggest a neurotic mechanism, but seen in association with other disturbances they take on a more sinister aspect. Examples of such responses are certain types of obsessional behaviour, excessive fastidiousness, and an insistence on orderliness which tends to cramp the child's own free expression and activity. Anxiety is averted by such rituals, but in a way which often seems to inhibit further development. Somewhat similar are the outbreaks of apparently meaningless anxiety either so diffuse as to affect almost every activity of the child or attached to some relatively indifferent activity which can be understood only in symbolic terms—for instance, a child who showed tremendous fear in passing tall buildings. This was not related to any such idea as that the building would collapse on him, and he was unable to explain it to himself.

In many cases in which these particular instances are not exemplified there is a widespread alteration in emotional response, an uncertainty both in quality and quantity, which is highly characteristic. Uncontrollable outbursts of temper, excessive grief over trivial deprivations, excited laughter after some irrelevant stimulus, coupled with an indifference and apathy on other occasions, are among the most distinctive features of such cases. The impression given is often not that of a repression so much as of an uncertainty of control. These children are notoriously "difficult," if only because their responses are unpredictable from day to day.

In the more developed case certain bizarre features may obtrude on the behaviour, as, for example, the various forms of stereotypy. It is not uncommon

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to meet stereotyped tic-like movements, abnormalities of gait and posture which are maintained apart from organic lesions, and, in the realm of speech, repeated phrases or nonsense words. Behaviour patterns seem inclined to set into these stereotypies, as if the psychic material had become less plastic and more prone to adopt a stultified response. When the intellectual functions are examined, the difficulty of access becomes manifest. Good contact may be disturbed by negativism, by lack of interest, by fleeting and variable attention, and by true flight of ideas, and the output may be checked by incoördination, lack of drive, inhibition, or the qualitative deterioration which has set in. Retrospectively, it may be impossible to assess the validity of the early history; the developmental stages may have been imperfectly observed and have often never been recorded. In spite of these difficulties it may be possible to establish how far, and up to what point in time, development was normal and then to distinguish in what manner and by what agencies this normal course was interrupted or deflected. In the organic group under consideration the deflection may be sudden, as in the encephalitics, or insidious, as in Schilder's disease. What is perhaps characteristic for the group is the tendency for isolated abilities to persist alongside the most surprising lacunæ. Obviously, here more than anywhere, the ultimate syndrome is that of the dementia common to all, and the clinical picture must include a longitudinal section of development as a whole, as well as the cross-section shown at the time of examination.

The same applies when the physical functioning of the child is disturbed in such ways as sleeplessness, vagaries of appetite and of growth, and habit mechanisms, such as control of excretions, which can be determined as much by emotional disturbance as by intellectual failure. Development in these aspects may stop short of maturity or may regress to stages already mastered, and curious anomalies are to be noted, as, for example, a child aged 11 requiring spoon-feeding at meals, who attended scrupulously to herself in all matters of toilet and dress.

In discussing a series of organic cases, almost limited to one example of each, it is obvious that no generalisations can be made. I hope, however, to direct attention to points which may be raised in discussion, such as the following:—

(1) How far such studies may be regarded as elucidating an anatomy, if not a physiology, of deterioration.

(2) How far can such cases be seen as allied to schizophrenic deterioration in children.

(3) Some of the symptoms in this organic group are like those shown in a schizophrenic illness. Are they here the result of pathological processes, such as G.P.I. or epilepsy, or are there two diseases side by side? This latter can hardly be considered in the groups with a specific pathology, but it is a real problem in diagnosis in some cases of psychotic amentia, Weygandt's *Pfropf-hebephrenie*, and the epileptic case described.

(4) What features must be regarded as essential in establishing a diagnosis of schizophrenia in childhood?

CASE-RECORDS

The first case is one of congenital general paralysis of the insane.

CASE 1.—A girl aged 9, with congenital G.P.I., was referred by a general hospital as presenting a definite behaviour problem for six months. Her early development was normal; she walked and talked at 18 months and was clean at 9 months, with no subsequent failure in habits. She slept and ate well, and apart from whooping-cough had had no illness. She did not suffer from fits. Teeth were extracted for early decay when she was 3 or 4 years old.

Her interests were school, toys, and other children, but all rather as if she were younger than her age. She was affectionate, rather impulsively so, and excitable with other children. Recently there had been outbursts of more uncontrolled excitement and gaiety and fits of giggling. For the last six months she had taken to calling out "bitch, shit, pig, rat" to her mother, repeating this for no apparent reason, as if the words were on her mind. At the same time she had become increasingly irritable, with outbursts of violent temper when "crossed."

Psychologically, she was like a younger child, emotionally unstable, and over-dependent. Her attention was fleeting. Her I.Q. was 81, probably higher. Her behaviour was silly, childish, uninhibited, and outgoing, as well as timid. Definite physical signs included slightly altered speech (hardly more than a babyishly unclear diction), unequal pupils, and extensor response on one side. The diagnosis was confirmed by lumbar puncture.

Even in this congenital condition, with rapidly advancing deterioration, there is time for a phase of emotional instability, temper outbursts, and preoccupation with words of sexual significance to show itself. The rapport with her surroundings was good within her capacity; any alteration was in the direction of impoverishment rather than in any degree of withdrawal.

The next case is one of Schilder's disease.

CASE 2.—A girl, aged 10, with Schilder's disease, had "nerve attacks," refused to go to school, and would not look at objects, saying she could not see. This latter feature was undoubtedly due to the onset of cortical blindness, but it was observed for 5½ years before a definite diagnosis was made. During this time she was able to go about the house and do simple tasks and never collided with objects.

Her early development was normal and her family history negative. Her birth had been difficult. She had had no convulsions and walked and talked before 18 months. She easily learnt clean habits. She had had no serious illness. She was an only child. She began school at 5 and enjoyed it but never learnt to read. She was slow, shy, and retiring, and was upset by children teasing. So-called "nerve attacks" took the form of negativistic behaviour, when she would be mute towards others but talked to herself. In school she was either entirely passive and apathetic or would repeat some action or phrase over and over again.

It was impossible to obtain coöperation in an attempt to examine her psychologically. She was well grown and showed no physical signs except a curious slow creeping walk and groping as if she did not see. Her responses were slow and at times as if she were wilfully stupid or preoccupied—e.g., describing a somewhat swarthy physician as "white-haired." Her emotional state varied. She was seen in moods of tearful reasonless anxiety or else she was fatuously cheerful, chattering and repeating disjointed phrases in a way reminiscent of schizophrenic fragmentation: "My aunt is mad. My dad has got Spanish in his eyes. I'm Spanish." Her movements were poorly coördinated. She would repeatedly touch objects or move her bag in a stereotyped way; once she said that people in the street talked about her.

The condition progressed. The earliest physical sign was a double extensor response, and the final dementia was profound and not in any way distinctive. She became mute, semi-stuporose, and incontinent.

The next two cases are of schizophrenic-like development in boys with retarded mentality. Certain rather similar personality traits are to be noted.

CASE 3.—A boy, aged 15, worried, bit his nails, fidgeted, and stared into space. He had been born after prolonged labour and was the eldest of four. The family history was negative. He had been difficult to rear and was under weight. He crawled at 1 year, walked at 18 months, and talked at 2. Clean habits were learnt late; control of fæces at 6 and of urine at 8. He had often been ill and had had bronchitis and pneumonia. At school he was timid, cautious, and rather backward. He was afraid of other children and preferred younger children. He had no pride in his appearance.

His I.Q. was 72 and his performance consistent with his age. He was of poor physique with a small head. He bit his nails, fidgeted, and showed habit spasms. His speech was defective. He was apathetic, timorous, had no interests, and was becoming more withdrawn. At the same time he had outbursts of alarming temper at home if he were thwarted. Some anxiety was directed to fears as to his physical health. Occupationally, he failed when faced with difficulty, becoming vacant and indifferent.

CASE 4.—A boy, aged 14, was brought with the complaint that he was "quiet and had no pride in himself." A maternal aunt and his maternal grandmother had been insane. He was an only child, with a normal early history, retardation being doubtful. He was neglectful but not incontinent. He walked and talked at 18 months. He never joined with other children, being too passive, and would let them snatch his toys.

He never showed affection, but he depended excessively on moral support from his mother and two maternal aunts. Certain tics of face and lips and manual mannerisms persisted and tended to increase. His articulation was not clear, and sometimes he refused to speak, showing periodic mutism. He had always had outbursts of childish temper; these were becoming worse and more frequent, and solitariness, apathy, and falling off of all social interests were becoming very pronounced. His I.Q. was 78 and his performance rather higher, with a curious, almost specific, ability to memorise and manipulate numbers.

The next case is one of epilepsy with deterioration or complicated by schizophrenia.

CASE 5.—A boy, aged 8, was referred for nervousness. He had always been a difficult child. The family history was negative apart from the fact that his mother had had three isolated fits during adult life. He was the only child of elderly over-particular parents.

His early development had been slightly retarded, but he was walking and talking by 20 months. He was rather helpless, depending on his mother for help with dressing, this being as much her fault as his. He had had no serious illness. He never made friends with children, for he became too excited, and acted silly, and then they teased him.

Nervous movements and mannerisms were noted. His I.Q. was 80–90. He was a precocious child in some ways but retarded in others—e.g., educationally. A psychological report says that he "spends energy avoiding difficulties rather than tackling them." Later, at the age of 9, he already felt that other children were discussing him unfavourably. He said, "I wish I were dead." Once he was apparently hallucinated and stopped up his ears because he could hear other boys threatening him. At this time he began to have screaming outbursts if thwarted. There was a complete failure of adjustment when he was moved to a senior school. He had outbursts of excitement and rage followed by remorse and was removed from school.

Then began a phase of curious interests, collecting rubbish for his inventions. If thwarted, he would repeat that God made him do it, suggesting autistic thinking. There was a tendency both to mannerisms and stereotypy in speech—a meaningless repetition of "Beg pardon." A year later his mother found him one day alone in the house, cursing and swearing against God and his mother.

Subsequently he began to play truant and to wander. On his wanderings he continued to acquire curious detached bits of knowledge—e.g., of antiquities and minute details of tram routes. At the same time he was quite irresponsible, even over simple errands, although able to go off on his own all day. He would not be taken to church because he was so upset by the organ.

He gradually deteriorated, until at the age of 14 he had a fit. Since then he has had several typical major epileptic fits, with a positive electro-encephalogram and without signs in the central nervous system between fits.

The next case is one of dementia, possibly due to encephalitis or Heller's syndrome.

CASE 6.—A boy, aged 9, had had a normal history until he was 3, when he was admitted to hospital for a mastoid operation. He became very quiet and dirty in his habits while in hospital. He recovered after returning home after a month of bad sleep and night terrors. Six months later there was some return of symptoms with whooping-cough, and again in six months, when separated from his mother by her being confined of a second child, his brother.

Two months before he was seen he witnessed an accident. He seemed not to notice but gradually became very silent. Next day he became excited, screaming, crying, and shouting with laughter at intervals. He had previously had a cold. Then came a rapid deterioration: he was mute, inattentive, and restless, and bit his clothes. He seemed not to recognise his parents and screamed for them when they were beside him, but still he did not talk. After an interval he began to repeat rhymes and sing or talk to himself, paying no heed to others. His behaviour was odd, and he assumed queer postures. Since then there has been only very slight, if any, improvement.

His mental level is that of an imbecile and his behaviour that of a low-grade defective and untestable. Echolalia and perseveration are present, and his articulation (diction) is unclear. His movements are poorly coördinated, almost as if impulsive. There are no physical signs in the nervous system. His sleep is now good, and he can care for himself in his simplest physical needs.

The next case is one of true schizophrenia.

CASE 7.—A girl, aged 12¼, was worried and easily frightened and would not attend school. Her family history was negative. She was the younger of two siblings. Her early history was negative, except that she was never a good sleeper (cf. also Tramer's (1934, 1935) case and Lutz's (1937) cases 5 and 6 and two cases quoted by him).

She was always nervous, especially when away from home, and antipathetic to strangers. She had no friends and was over-passive with other children, excessively careful and particular over her clothes, and very modest. She could not mix in ordinary social life since she was 10. Easily upset, she would have an emotional outburst, recently amounting to temper and childish negativism. She showed no affection.

Psychological examination was impossible. Physical examination was likewise impossible, except sufficient to exclude gross organic lesion, such as G.P.I. She was negativistic, being resistive at times and apathetic and inert at others. She had some stereotyped movements and occasional grimacing. She repeated "Don't bother me; go away, don't bother me," and smiled to herself.

COMMENTS

The following features are common to all these cases:—

(1) Some failure in appreciation of reality values. The degree is least in the G.P.I. and most profound in the schizophrenic child.

(2) An emotional lability and easily provoked outbursts, with a fatuous affectionateness without lasting attachment in the G.P.I. and a considerable degree of emotional detachment in the others.

(3) A very early and lasting difficulty in establishing normal relationships with other children. All these children failed to adapt to others' demands or were themselves over-passive in response. In all but the G.P.I. this failure was sufficient to prevent the child's attending ordinary school.

(4) Stereotypy in gesture, action, or speech. (Obsessional features were shown by several.)

(5) In all but one, the history of early development is within normal limits, but by the time school age was reached intellectual impairment was queried in all. The importance of not accepting the diagnosis of backwardness without a careful inquiry must be emphasised, since by the time these cases came to clinical observation they were either untestable or, when tested, showed a retardation which on the history can, I think, be taken as secondary in all but case 3 (? *Pfropf-hebephrenie*).

Can the organic group furnish us with definite conclusions? Possibly only that the end-point in childhood dementia tends to be the same, reached by a variety of pathological processes. It seems clear, however, that organic factors may be difficult to exclude but must be constantly sought and rigorously excluded before a diagnosis of schizophrenia can be allowed. Then, having made the diagnosis, we are faced with a condition carrying an equally bad prognosis, unless new methods of therapy in schizophrenia prove of more avail than the older ones.

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HERPES SIMPLEX

STUDIES ON THE ANTIBODY CONTENT OF HUMAN SERA*

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AND

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SEVERAL investigations of the content of human sera in antibodies against herpes virus have been recorded. Neutralisation tests have been chiefly used, but complement fixation was utilised by Brain (1932). The main incentive to such studies was the opinion of Levaditi and his colleagues (1922) that encephalitis lethargica was the result of infection of the central nervous system by an unusually neurotropic strain of herpes virus. If so, some significant difference in the proportion of persons with herpes antibody would be expected from a comparison of postencephalitic patients with a control series of similar age and class distribution. Several different methods of testing for antibody have been used: Zinsser and Tang (1929) inoculated serum-virus mixtures intracerebrally in rabbits; Andrewes and Carmichael (1930) titrated by intradermal inoculation in the rabbit; and Weyer (1932) and Hudson, Cook, and Adair (1936) inoculated mice intracerebrally.

On the whole, the results obtained by the various workers have been consistent. A high proportion of adult human sera, obtained usually from hospital patients, possess neutralising antibody figures varying from 60 to 90 per cent. If one collects all the available data, irrespective of the method used for titration, 545 adult human sera have provided 405 positive results, equal to 74 per cent. Sera from children show a lower proportion containing antibody. Weyer (1932) found the following figures: 0–5 years, 14 per cent.; 5–10 years, 38 per cent.; 10–15 years, 40 per cent. Postencephalitic patients show approximately the same percentage of positive sera as do control groups. Gay and Holden (1931) found that only 2 of 13 cases of acute encephalitis showed antibody to herpes, but this finding has not yet been confirmed. Weyer (1932) found that all of 27 sera from children in the acute stage of poliomyelitis contained no herpes antibody. As will be mentioned later, we have not been able to confirm this statement for Victorian poliomyelitis cases.

Persons who suffer from recurrent labial herpes almost invariably have antibody in their sera (Andrewes and Carmichael 1930, Brain 1932). Gay and Holden (1931) came to a contrary conclusion, but our results are wholly in accord with the other workers.

None of the previously reported work has been fully quantitative, the usual procedure having been to mix equal volumes of a 5 per cent. brain emulsion and undiluted serum and to test the infectivity of the mixture after some arbitrary period of contact. The primary object with which the present work was begun was to determine whether Weyer's observation of the absence of herpes antibody in children with poliomyelitis could be confirmed with material from the Victorian 1937 outbreak. For this purpose an egg-adapted sub-strain of the well known H.F. strain of herpes virus was developed, and sera were titrated by the quantitative chorio-allantoic technique (Burnet 1936). The studies on poliomyelitis sera gave no results of value, but several points of interest arose which seem worth reporting.

TECHNIQUE

A detailed study of the kinetics of the herpes virus-antibody reaction is in course of publication (Burnet and Lush 1938), and full details of technique are given there. In brief, the serum to be tested is heated to 56° C. for 20 minutes before being used. Equal volumes of undiluted serum and suitably diluted virus are mixed and left in the refrigerator for 1½–2 hours. Then 0·05-c.cm. quantities are placed on the chorio-allantois of twelve-day eggs, and the foci which develop after two days' further incubation are counted. Results are expressed as the percentage of foci which appear in terms of the count obtained with control material.

"ALL OR NOTHING" CHARACTER OF HUMAN ANTIBODIES TO HERPES

Andrewes and Carmichael (1930) commented on the absence of indeterminate reactions in their tests. The sera all completely neutralised their test dose or showed no action whatever. With the egg-membrane technique this sharp difference between positive and negative sera can be more quantitatively expressed. In our series of tests on 126 sera only 3 gave values outside the ranges 0·1 per cent. or less and 30–100 per cent. Positive sera usually give values nearer to 0·01 per cent., and our practice with an unknown serum is to inoculate four eggs with a mixture of serum and undiluted virus and four with a mixture of undiluted serum and virus diluted 1 in 5000. In almost every instance one or other of these groups will give convenient small numbers of foci

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and allow an accurate value to be given to the serum. When it is only required to know whether a serum is positive or negative, stock virus is prepared by grinding a membrane (glycerolated in the refrigerator for a few days) with 5 c.cm. of broth, centrifuging for five minutes in an angle centrifuge and using the supernatant fluid. Each serum is mixed with a 1 in 100 dilution of virus and tested on two eggs. Negative sera give a semi-confluent lesion equivalent to about 1000 foci; positive sera give membranes without foci.

DIFFERING PROPORTION OF POSITIVE SERA IN DIFFERENT SOCIAL CLASSES

In Andrewes and Carmichael's paper there is a table showing the results with a group of "normal" persons. Most of these were hospital patients, and 21 out of 23 had antibody. Five medical students also included in the group were negative. This seemed hardly likely to be a matter of chance, and it stimulated us to sort out our results according to social status as far as that was practicable. The accompanying table shows the results obtained with (*a*) graduate members of the institute or hospital staffs, (*b*) laboratory assistants, (*c*) unselected hospital patients (post-mortem and Wassermann sera), and (*d*) children with poliomyelitis in Fairfield Infectious Diseases Hospital. It will be seen that the difference between university graduates and the cross-section of hospital patients obtained from unselected Wassermann sera is highly significant by any statistical test. The relation of this finding to the epidemiology of herpes will be discussed later.

HERPES ANTIBODY CONTENT OF HUMAN SERA

Group	Antibody against herpes virus	
	Positive	Absent
Graduates	3	12
Non-graduate institute staff ..	13	9
Poliomyelitis cases	8	6
Hospital patients	51	4

Positive = Sera which reduce the count of foci on the developing egg below 0·1 per cent. of the control.
Negative = Sera giving a count of 5–100 per cent. of the control.

ABSENCE OF VIRUS IN GASSERIAN GANGLION OF PERSONS WITH HERPES ANTIBODY

The distribution of herpes zoster is most easily explained by the primary pathological process taking place in the corresponding posterior-root ganglion. There are, of course, very striking differences between herpes zoster and herpes simplex, but there are sufficient resemblances to suggest the possibility that the latter virus persists in the sensory ganglion which corresponds to the site of election for the local lesions—namely, the Gasserian ganglion. Teague and Goodpasture (1923) describe a case of supra-orbital herpes of the zoster type from which they obtained a virus pathogenic for the guineapig, and they refer to the work of Howard (1905), who noted pathological changes in the Gasserian ganglion of persons who had shown herpetic manifestations during life.

To test the possibility of detecting virus in the Gasserian ganglion of persons having high antibody titres, material was obtained from six consecutive post-mortem examinations. None of the patients had suffered from herpes during the final illness. Serum was obtained by a Pasteur pipette passed through a small slit made in the ascending aorta. (This is a much more satisfactory way of obtaining post-mortem serum than by opening into any of the chambers of the heart. The aorta nearly always contains almost pure serum.) After the brain had been removed, the base of the skull was swabbed out with spirit and the Gasserian ganglia removed to glycerol-Ringer solution. The sera were inactivated and tested for herpes antibody: four were positive, two negative. When these tests had been completed and the ganglia had been glycerolated for a week in the refrigerator, emulsions of the ganglia were made in 3–4 c.cm. of broth. A rabbit was inoculated on the scarified cornea and the remainder of the emulsion injected intraperitoneally. None of the animals developed keratitis, nor were any herpes antibodies present in their sera taken fourteen days after inoculation. Finally, all rabbits were inoculated corneally with the strain H.F. All developed severe keratitis, followed by fatal encephalitis seven to nine days after inoculation. There is therefore no evidence that the virus is present in a demonstrable form in the Gasserian ganglion of persons with a high serum titre of herpes antibodies.

ABSENCE OF CORRELATION BETWEEN SUSCEPTIBILITY TO POLIOMYELITIS AND LACK OF HERPES ANTIBODY

Weyer (1932) found that among 27 sera from cases of early poliomyelitis there was no detectable herpes antibody in any. A control series from children not suffering from poliomyelitis gave 17 positive sera out of 43 tested. This finding appeared to have important implications: either that herpes and poliomyelitis had some fairly close antigenic relationship, or that children naturally unable to produce antibody against a ubiquitous virus like herpes were liable to suffer paralytic attacks of poliomyelitis, whereas the "good" antibody producers had only a subclinical infection.

During the serious Victorian epidemic of poliomyelitis 1937–38, serum samples were obtained for us by Dr. S. W. Williams from children in the acute stage and two to three months later from the same patients during convalescence. These have been used primarily for studies on poliomyelitis antibodies, but they have also been tested for their antibody content against herpes virus. As shown in the table, 8 of 14 patients showed herpes antibody in both samples of sera. The other 6 contained no antibody in either. Those with antibody showed the usual high activity without any significant difference between first and second samples. Two pooled sera from monkeys convalescent from poliomyelitis showed no detectable antibody.

These facts are sufficient to show that Weyer's findings are not applicable to the conditions existing in Melbourne, and that, whatever the significance of the New York findings may be, they are not due to a common antigenic character of herpes and poliomyelitis viruses.

PRIMARY INFECTION WITH HERPES VIRUS

In an important recent paper Dodd, Johnston, and Buddingh (1938) state that herpes virus can be obtained from the lesions of aphthous stomatitis in infants and young children, and they consider that this disease represents a primary herpetic infection. We have confirmed this finding with material from two children seen in the outpatient department of the Children's Hospital, Melbourne. A fuller account of the condition will, it is hoped, be given later in collaboration with Dr. Williams. Here we are concerned only with the laboratory findings. From both cases, Y (aged two years) and B (aged 20 months), swabs from mouth lesions produced typical herpetic

keratitis in rabbits, and from a membrane filtrate of the conjunctival pus of the primary rabbit lesion (Y) typical herpes foci were produced on the egg membrane. The inoculated rabbits developed herpes antibody, giving the following titres:—

R.174 (Y.), 11 days, 1·4 per cent.; 21 days, 0·007 per cent.
R.182 (B.), 8 „ 3·3 „ 20 „ 0·016 „

Almost conclusive evidence that this stomatitis represents the primary infection with the virus is given by the results of serological tests. Blood taken at the same time as the mouth swabs in both cases contained no significant antibody. The serum Y gave the full 100 per cent. count of foci, and B showed about 30 per cent., a value within the range we consider as negative, although it might also indicate a commencing antibody production. Serum taken three weeks later showed definite antibody, reducing the count of foci to 2·1 per cent. of the control in the case of Y, to 0·75 per cent. for case B. It will be seen that the sera are much less active than serum from an average infected adult, but the activity is sufficient to establish the primary nature of the stomatitis infection.

DISCUSSION

These results seem to provide material of considerable epidemiological interest, bringing herpes simplex infections much more closely into line with other virus diseases than has usually been recognised. In outline, the position seems to be that primary herpes is an infective disease spread by droplet infection or by salivary contamination, particularly in the age period of one to three years. The initial lesion is a vesicular stomatitis, often with fever, and not uncommonly associated with secondary bacterial infection. In all probability, once infection has been effected in infancy, the virus remains present in the body throughout life. In no other way is it possible to account for the fact, which has been strikingly evident throughout this investigation, that, irrespective of the age of the subject, if antibody is present at all it is present in high titre.

The sharp differences in regard to the proportion of positive antibody carriers in different social groups can hardly be explained except on the assumption that the serological state is determined early in life and not changed thereafter. There are considerable differences in the extent to which pre-school children mix in the different social grades, but during school and adult life opportunities for the spread of infection must be approximately equal. As a working hypothesis, we may adopt the view that, once maternally transmitted immunity has been lost, there is a period roughly from nine months to perhaps five years of age during which the child is readily susceptible to infection of the buccal mucosa by herpes virus. Once infection has been acquired, the virus persists in certain cells throughout life and provokes its characteristic manifestation, labial herpes, when conditions are suitable. After the period of early childhood we must assume the development of a resistance to primary extrinsic infection which is independent of the presence of circulating antibody. This resistance can readily be overcome when the virus is experimentally inoculated, for instance, as in Teissier, Gastinel, and Reilly's (1926) experiments on the scarified skin, but it is sufficient to prevent infection of the intact mucous membranes. Alternatively, if herpes infection takes place in older persons, the infection must be transient, provoking little antibody and not producing the permanent carrier state. In this connexion it is interesting to consider the only experimental virus disease which is known to persist under suitable conditions through the whole life of the animal—lymphocytic choriomeningitis in mice. Traub (1938) finds that mice infected in utero or immediately after birth develop an infection which not uncommonly kills them; but, if they survive, their tissues remain virulent for at least a year and probably for the whole life of the animal. When older animals bred from non-infected stock are experimentally infected, the virus persists for some time but is nearly always eventually got rid of completely. Against the view that adult primary infections do not produce persistence of the virus in the body is the evidence of Nicolau and Poincloux (1924) that a human subject accidentally infected with herpes may suffer recurrent lesions at the site of inoculation. Whatever alternative is adopted does not detract from the importance of infancy and early childhood as the determining period in regard to persistent herpetic infection.

The site of the persisting infection is still unknown. The two most important possibilities are that the virus remains dormant (1) in the nervous system, with the Gasserian ganglion as the most probable site in relation to labial herpes, or (2) in the epithelial cells of the buccal cavity, which is the locus favoured by Levaditi and his collaborators (1922). We have given evidence that the virus is not demonstrable by inoculation methods in the Gasserian ganglia of persons with high titre antibody in their serum. Unfortunately this is hardly conclusive. It is conceivable that dormant virus in a cell may not be liberated by grinding or even by digestion of the cell in the tissues of the inoculated rabbit. More important negative evidence would be to show the absence of virus in the ganglion of a patient dying at a time when recent herpes lesions were present, but no such opportunity has been available.

SUMMARY

(1) Herpes antibody in human sera can be titrated on the chorio-allantois. (2) With very few exceptions, human sera either contain no herpes antibody or are highly active against the virus. (3) Herpes antibody is much commoner in sera from hospital patients than in sera from a group of fifteen university graduates. (4) There is no relation between susceptibility to clinical poliomyelitis and absence of herpes antibody. (5) Herpes virus could not be demonstrated post mortem in the Gasserian ganglion of persons with high-titre herpes antibody. (6) Aphthous stomatitis in infancy is the common manifestation of primary infection with herpes virus. (7) The epidemiology of herpes infections is briefly discussed in the light of these findings.

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HÆMOPTYSIS AND LUNG INFILTRATION CAUSED BY AVITAMINOSIS

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While treating a number of patients with citrin * for hæmorrhagic diathesis in the medical department of the Finsen Institute we observed a case in which the patient's main symptoms were a pulmonary affection with hæmoptysis and radiological changes in the lungs. Under this treatment the tendency to hæmorrhage and the lung symptoms both receded.

CASE-RECORD

The patient, a woman aged 36, was admitted to the Finsen Institute on May 31, 1937. There was no tuberculosis in her family, and she had been healthy in childhood and youth, apart from a tendency to have bruises from slight trauma. Her menses, from her 14th year, were always regular but weak, 2–3 days/4 weeks. During the previous ten years she took thyroid extract daily, for reduced metabolism, but she had not done so during the past year.

The present affection began in January, 1937, being manifested by cough, expectoration, hæmoptysis, swollen cervical glands, gingival hæmorrhage, and spontaneous ecchymoses and petechiæ, especially on the extremities; there were also poor appetite, pronounced lassitude, and functional dyspnœa, but no increase of temperature. This syndrome having aroused suspicion of pulmonary tuberculosis, the patient was examined in February, 1937, at the tuberculosis dispensary, where a radiogram revealed a large right hilus, for which reason she was kept in hospital from March 2 till April 3 for observation for pulmonary tuberculosis.

The Mantoux reaction was negative (0·01 mg.−; 0·1 mg.−), and culture after gastric lavage proved negative for tubercle bacilli. Nothing abnormal was found in the urine. Examination of the blood gave the following results: sedimentation-rate 15 mm., hæmoglobin 91 per cent., red cells 5,020,000, colour-index 0·91, leucocytes 6100, and platelets 100,000 and 164,000. Radiography of the lungs on April 2 showed both hilar regions enlarged and blurred and the perihilar outline enlarged, especially on the right side. The patient had laboured respiration, and numerous râles were heard throughout the anterior and posterior surfaces of the lungs. There were many large ecchymoses on the lower extremities and infiltration of the subcutaneous tissue.

Since spontaneous ecchymoses continued to appear, she was treated with lime, lemons, and carbon-arc light. There was some improvement, though the weight was still falling. She then insisted on being discharged. Since she continued to cough and her condition became worse, she was again examined at the dispensary, and radiography on May 21, 1937, revealed a massive shadow in the middle of the right lung area. The Mantoux reaction being negative and culture after gastric lavage showing no tubercle bacilli the lung change was interpreted as a tumour, and the patient was sent the same month to the Radium Hospital, where repeated examinations of her sputum were negative for tubercle bacilli, and the Mantoux reaction was negative (0·1 mg.−; 1 mg.−). Examination of the blood showed platelets 288,000, coagulation-time 2 min., and bleeding-time 2½ min. Nothing abnormal was found on laryngoscopy and posterior rhinoscopy. Her temperature was normal.

A radiogram taken on May 30 (fig. 1A) revealed, as did the last radiogram before hospitalisation, a massive shadow in the middle of the right lung area, extending from the lateral wall to the hilar region. The lower edge of the shadow was sharply defined, corresponding to the interlobular groove, whereas the upper edge was more blurred, the shadow merging with that of the lung.

There being some petechiæ and ecchymoses over the sternum, antecubital fossæ, and legs, the patient, without being treated, was transferred to the medical department of the Finsen Institute. Her chief symptoms on admission were cough, expectoration (occasionally blood-tinged), slight stitch in the right side, poor appetite, loss of weight (15 kg. during the past half-year), great tiredness, and ecchymoses.

She was pale and thin, weighing 46·7 kg. (height 155 cm.). Her teeth were defective, some with parodontitis; her oral mucosa and gingiva were normal, with no sign of bleeding; and she had cervical adenitis. There was no dyspnœa or cyanosis, but respiration was somewhat laboured, almost stertorous. There was dullness on percussion over the right anterior and posterior surfaces of the lungs as far as the third rib, with bronchial respiration and coarse râles. There were a few petechiæ over the sternum and ecchymoses over both antecubital fossæ and a few on the thighs. (When shortly after admission the patient was about to be radiographed, large ecchymoses appeared on the back of both thighs when she was placed on the table.) Physical examination otherwise revealed nothing abnormal.

* The citrin was kindly provided by Prof. Szent-Györgyi and by the Ferrosan Company.

A (30.v.37) B (20.x.37) C (26.viii.38)

Fig. 1—Radiograms: A, showing massive shadow in the middle of the right lung area, extending from the lateral wall to the hilar region. On June 25 and July 26 the infiltration in the right lung was unchanged. B, showing right lung much clearer, with only an interlobular pleural shadow and a slight density of the right hilar region. C, showing both lungs apparently normal except for remains of the former interlobular pleural shadow in the right lung.

The blood Wassermann reaction and the sero-reaction to *Bact. tularense* were negative. A blood-count gave the following results:—

Red cells	4,500,000	Polymorphs	84 %
White cells	6900	Lymphocytes	10 %
Hæmoglobin	80 %	Monocytes	6 %
Colour-index	0·9		
Platelets (eight examinations)	290,000–500,000		

The sedimentation-rate was 21 mm. (for the later examination see fig. 2); bleeding-time (Duke), 2–3 min. (six examinations); coagulation-time, 1–2 min. (six examinations); plasma colour figure, 3–4; serum protein, 7 per cent. (3·22 per cent. albumin and 3·78 per cent. globulin; relative albumin percentage 46). Formolgel reaction + 24 hours. Takata ++.

Direct examination of the sputum for the presence of tubercle bacilli proved negative on eight occasions; culture and inoculation of sputum also produced negative results. Direct microscopy and cultivation proved negative for actinomyces. The Mantoux test was negative (1 mg.−). Capillary resistance was considerably lowered: + 40 mm. (suction method), Bexelius + (more than 100 petechiæ) (Jersild and Elmby 1938). Sternal puncture showed nothing abnormal. There were no pathological components in the urine. The basal metabolic rate was 120–105. Radiography of the lungs on June 25 and July 26, 1937, showed that the infiltration previously noticed in the right lung (fig. 1A) was unchanged. The temperature was normal throughout the period in hospital.

Treatment.—The greatly lowered capillary resistance and the tendency to spontaneous ecchymoses and petechiæ being manifestations of the hæmorrhagic diathesis, ascorbic acid was administered, 300 mg. being injected intravenously daily from June 20 to 29. No improvement was observed; fresh ecchymoses and petechiæ constantly appeared, and the capillary resistance was unchanged: June 18 + 60 mm., June 22 + 50 mm., July 1 + 35 mm. On June 23 there was hæmoptysis.

Treatment with vitamin P was then begun, 50 mg. of citrin being injected intravenously daily from July 1 to Aug. 4. During this treatment the following capillary-resistance values were found:—

July	1 + at	35* mm. Hg.
„	8 + „	60 „
„	10 + „	85 „
„	16 + „	100 „
Aug.	3 + „	150† „

* Bexelius + (more than 100 petechiæ).
† Bexelius − (no petechiæ). (See also fig. 2.)

Simultaneously with the distinct improvement of the capillary resistance the ecchymoses and petechiæ disappeared (only insignificant ecchymoses after July 13 and none after the 29th). There was no cough or expectoration after the 17th, and the general condition improved; the appetite was better, and the patient began to put on weight (2·1 kg. during the citrin treatment). On Aug. 4 she was out of bed and quite well. Menstruation began on Aug. 19 after four months' amenorrhœa. A radiogram taken on Aug. 25 showed that the infiltration in the right lung was beginning to clear. There was a slight dullness corresponding to the affected lung area, but no murmurs or definite respiratory changes were found. The patient was discharged on the 28th, her weight being 49·5 kg., a total increase of 5 kg.

Subsequent examinations.—On Oct. 20, 1937, she reported that she had had no ecchymoses since discharge, felt well, did not expectorate, and had put on 4 kg. in weight. The radiogram (fig. 1B) showed that the right lung was much clearer, with only an interlobular pleural shadow and a slight density of the right hilar region.

On Aug. 26, 1938, her general condition was good, her weight having increased from 53·3 to 64·2 kg. She had no cough or expectoration. Her menses were regular and normal in amount. There was no sign of hæmorrhagic diathesis. On auscultation the lungs appeared normal. The radiogram (fig. 1C) showed remains of the pleural shadow on the right side; otherwise both lung areas appeared normal.

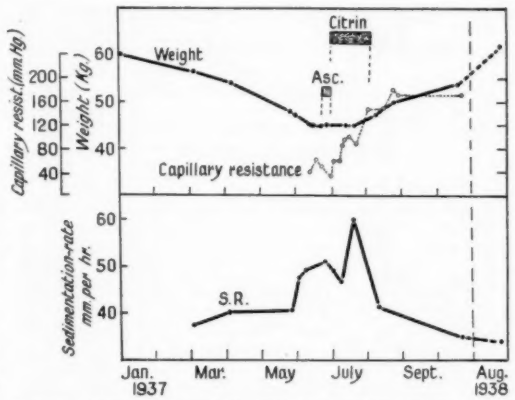

FIG. 2—Graphs of weight, capillary resistance, and sedimentation-rate, showing effect of treatment with citrin. Asc.=ascorbic acid.

DISCUSSION

Presumably the only explanation of this case is hæmorrhage in the lung tissue, with hæmoptysis and radiological signs of infiltration. I have previously reported (Jersild 1938) a case of hæmorrhagic diathesis (Schönlein-Henoch purpura), in which there were hæmoptysis and radiological changes in the right lung. In spite of careful examination at various tuberculosis dispensaries no pulmonary tuberculosis was found in this case either. The present case emphasises the advisability of always testing the capillary resistance in cases of hæmoptysis in which no causal organism can be found. It would also be of interest to investigate whether some of the hæmoptyses of tuberculous patients are not the result of a deficiency of vitamin P.

SUMMARY

A woman of 36 had hæmoptysis, and X-ray examination showed infiltration of the lung. There was no other evidence of pulmonary tuberculosis, but she had had previous manifestations of the hæmorrhagic diathesis. She was cured with citrin (vitamin P), the lung infiltration receding also.

My acknowledgments are due to my chief, Dr. Hecht Johansen, for permission to report this case.

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"... I was thinking to myself of the hopeless woe of the young mothers who never got an anæsthetic—for you can't call a rope to bear down with an anæsthetic—but were allowed to suffer on provided they were healthy, and this chiefly owing to the custom of their elders, the 'auld ones,' who had a child in agony thirty years ago perhaps, and so insisted that the young women should 'go through it' in their turn—man's inhumanity to Man is as nothing compared with the remorseless and relentless inhumanity of woman to woman, or man for that matter; and the holiest women are the worst...." From "Tumbling in the Hay" by O. ST. J. GOGARTY. London. 1939.

FREE AND COMBINED ŒSTROGENS IN THE BLOOD DURING PREGNANCY

BY O. MÜHLBOCK, M.D., Ph.D.

(From the Pharmacotherapeutic Institute of the University of Amsterdam)

IT has long been known that the major part of the œstrogenic hormones in the urine of pregnant women is eliminated in a combined form,[1 2 5–7] which is scarcely active œstrogenically when injected (Cohen and Marrian 1936). Hence in the determination of the total amount of hormones eliminated it is necessary to bring about first of all the conversion of these combined hormones into the free hormones by heating with acid (hydrolysis) (Cohen and Marrian 1935). It was also demonstrated eighteen months ago that part of the œstrogenic substances circulates in a combined form in the blood of pregnant mares (Mühlbock 1937).

It appeared important therefore to examine the blood of pregnant women, and this has now been done. Since we were not justified in taking the blood samples from healthy pregnant women, we have availed ourselves of retroplacental blood from healthy women in childbirth. At the same time we have also examined the blood of women with pregnancy toxæmia, on whom venesection had been carried out on therapeutic grounds.

The extraction was carried out according to the process worked out by Dingemanse (see Mühlbock 1937). The retroplacental blood was collected directly in the labour ward in a bottle containing alcohol; the alcohol was evaporated and the residue extracted directly by warming with benzene, first in the neutral state and then after addition of hydrochloric acid. Standardisation was always carried out on castrated mice and compared with a standard preparation. Neutral extraction gives the free hormone; extraction after addition of acid gives the combined hormone. In order to check the completeness of the neutral extraction, the retroplacental blood was extracted a second time in the neutral condition: this second extract was not active œstrogenically. The results are collected together in the accompanying table, the international units given referring to 1 litre of blood or serum respectively.

Kind of blood		Free hormone (I.U.)	Combined hormone (I.U.)	Total hormone (I.U.)	Percentage combined
Retroplacental blood	(1) ..	1000	1000	2000	50
	(2) ..	500	250	750	33
Pregnancy toxæmia serum	Case 1	250	100	350	29
	„ 2	500	400	900	44
Eclampsia post-partum	Case 3	100	50	150	33

It will be seen that in all the blood samples examined from pregnant women part of the œstrogenic hormone was present in a combined form; the combined part amounts to 30–50 per cent. based on the biological activity. Hence in order to obtain the total œstrogenic hormone content of the blood of pregnant women it is necessary to examine the blood after hydrolysis. In the investigations hitherto published this necessity has not been borne in mind.

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MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON

AT a meeting of this society on March 13, with Dr. C. E. LAKIN, the president, in the chair, a discussion on

Coronary Thrombosis

was opened by Dr. D. EVAN BEDFORD. He said that the term was commonly employed to include all cases in which acute infarction of the heart was believed to be present, although in fact there might be no thrombosis but only an atheromatous stricture of the artery. Fuller understanding of the pathogenesis of anginal pain had only served to emphasise the essential unity of angina pectoris with coronary thrombosis. The pain was an expression of cardiac ischæmia, the usual cause of which was coronary obstruction. Angina was the symptom of coronary occlusion, and the two could not be sharply distinguished. Statistics showed that 85 per cent. of all cases of coronary thrombosis were males, the sex-incidence becoming almost equal in advanced age. The disease had always been common and the apparent recent increase in its incidence was probably due to its better recognition. The basis of coronary occlusion was atheromatous sclerosis or atheroma of unknown cause. Hypertension could not be regarded as causal, but it probably favoured the onset of a severe degree of atheroma. The general impression of clinicians was that the usual subject was a stocky, powerfully built person with a tendency to obesity. This tendency was important, if only because it could be remedied. In Dr. Bedford's opinion neither intellectual nor manual labour, but rather hard living and self-indulgence, predisposed to the disease. There was some evidence that in temperate zones it was more frequent in the winter, and there might be good reason for sending potential cases to winter in warmer climates. The importance of heredity had been much exaggerated.

The three common types were anterior, or right, infarct; posterior, or left, infarct; and lateral infarct from occlusion of the circumflex branch. The clinical picture of the acute attack was well known. Its three cardinal features were anginal pain, circulatory collapse and shock, and dyspnœa and heart failure. Fever, leucocytosis and a raised sedimentation-rate were common. Pain might be slight or absent in a patient who already had some degree of cardiac insufficiency or failure. Acute left-ventricular failure in a patient with normal or low blood-pressure and no signs of aortic disease should suggest coronary occlusion. The more gradual types of infarction were nearly always painless. Another form of onset was syncope and collapse, followed by dyspnœa and œdema. In the abdominal or pseudogastralgic type anginal or epigastric pain was associated with vomit-

ing or distension. Abdominal symptoms occurred in severe cases, but these patients gave ample evidence of cardiac weakness. Of the complications, embolism was likely to occur in the first ten days; it might be pulmonary, systemic, or both. Abnormal rhythm might occur in the first week, occasionally later. About half the patients had auricular fibrillation, and about 14 per cent. suffered from paroxysmal tachycardia or heart-block. Cardiac aneurysm was found in 9 per cent. of cases post mortem, nearly always at the site of an anterior infarct, so that the electrocardiogram was always of the T_1 type. The T_3 type was associated with posterior infarction.

Dr. Bedford demonstrated the correlation of electrocardiographic readings with clinical and pathological data. The differential diagnosis from gall-stones and gall-bladder disease might be difficult, and in cases of doubt an electrocardiographic test should be made before operation. The mortality from the acute type of coronary thrombosis did not exceed 30 per cent. The chance of the patient's living two years after the attack was in his favour, but after that the odds against him increased until they were four to one against his living five years. A patient whose heart was enlarged had only half as good a prognosis as one whose heart remained the normal size. Morphia should be given in doses sufficient to relieve pain, and absolute rest and adequate nursing were imperative. A low-calorie diet was of real value—e.g., 200 c.cm. of milk at four-hourly intervals four times a day, supplemented by water. Dr. Bedford insisted on a complete fluid diet for at least a week, and regarded overfeeding in the early stages as a real danger. Moderate doses of digitalis were needed in heart failure or auricular fibrillation. Quinidine might be life-saving in paroxysmal ventricular tachycardia. Two months in bed was the minimum safe period, and should be followed by three to six months' convalescence. Patients who made a good recovery should be restored to activity and work; idleness was deleterious. Grafting operations were on trial, and their merits might well be explored in cases of syphilitic stenosis of the coronary ostium, which always became worse in spite of medical treatment.

Dr. C. KEITH SIMPSON spoke from the angle of a medicolegal pathologist, a type of worker who, he said, saw an unusually large number of these cases after death. The clinician had only an indifferent knowledge of the vast numbers of persons who dropped dead of coronary disease without ever having suffered or seen a doctor. The pathologist should not slit the vessel lengthwise but make repeated transverse cuts so close together that no part of the lumen escaped examination. The records of his last 3000 autopsies showed 580 cases of death from coronary disease, including 330 from coronary thrombosis. The age-incidence of coronary occlusion alone was about a decade higher than that of thrombosis. The incidence was much greater in the left artery, particularly in the descending branch, and increased with the physiological load. Atheroma was not only a constant accompaniment of thrombosis; it was always present at or near the site. Dr. Simpson described the local factors and the mechanism by which a laminated thrombus grew slowly; when it had almost completely blocked the lumen, a red thrombus grew quickly down the lumen on the distal side. If death took place before the red thrombus had formed, the keenest sight and the most perfect technique were required to detect every laminated clot. The most important systemic factor was sleep, with its retardation of the flow in the coronary vessels. In a large proportion of the cases death occurred in sleep or during a doze after a satisfying meal. The precipitating retardation of circulation might, however, also be occasioned by a sudden alteration of flow, as in collapse from coronary occlusion, perforated ulcer, cerebral hæmorrhage or injury. The reaction to mental excitement might be complicated by thrombosis, and debilitating disease might predispose, especially when accompanied by infection.

Not a few persons lived to a natural old age after coronary thrombosis or even infarction. An old infarct scar was found at one autopsy out of every thirty. The immediate prognosis was, however, grave, 48 per cent. of deaths occurring within forty-eight hours and 82 per cent. of the remainder within a week. One-third of the patients with infarction who came to post-mortem examination had died from rupture of the heart at the fourth or fifth day. On the other hand patients might follow exhausting occupations for some days before collapsing. Of the 93 cases of old infarct scarring, 82 had had no previous history and had never even complained of symptoms.

In a large number of accidents involving injury, heart disease had in fact been the cause. For example a workman had been found dead in a partly erected house with a number of collapsed props round him, but autopsy showed that he had died of ruptured infarct. Cases in which trauma precipitated thrombosis were of three distinct kinds: those in which there was direct injury of the chest, those in which thrombosis followed injury to another part of the body and collapse, and those in which thrombosis followed collapse which might be held due to mental shock. Action was sometimes unfortunately taken on the slenderest evidence of a connexion between occupational strain or a slight injury and the development of coronary thrombosis, disablement and death. Each case demanded the most careful examination and judgment on its own merits.

DISCUSSION

Dr. A. HOPE GOSSE showed a number of electrocardiograms illustrating various types of coronary thrombosis. One of these showed that the rhythm of auricular fibrillation under operation for removal of calcium from the pericardium had become normal five minutes after the formation of the window, but a premature contraction had occurred every time the surgeon touched the ventricle.

Dr. G. E. S. WARD described a patient who had developed heart-block two or three days after the thrombosis; it had lasted less than forty-eight hours. He asked whether this was a common experience, and what was the reason for the heart-block. He also asked the youngest age of incidence, and mentioned that he had seen that day an electrocardiogram typical of coronary thrombosis from a young man in the twenties who had had no pain.

Dr. F. PARKES WEBER suggested that rumour, as reported by Tacitus, had been wrong in ascribing Nero's death to poison administered by the physician Xenophon summoned from Cos by the Empress Agrippina. The real cause was more likely, he considered, to have been coronary thrombosis.

Dr. C. J. BERKELEY WAY declared that, so far from the symptoms of acute coronary thrombosis being familiar to medical practitioners, most doctors had not yet become "coronary conscious." He had become so through a dramatic case he had seen ten years ago, and he now always went at once to any

patient who complained of flatulent indigestion in the middle of the night. Knowledge of the condition was taught freely in the schools, but had not yet reached the body of practitioners over forty-five years of age.

Dr. E. ADOLF SCHOTT said that the best time to obtain the fully developed electrocardiographic record was twenty-four hours after the attack. Pathological conditions in the gall-bladder and lungs could set up a reflex action which would produce some of the characteristic electrocardiographic abnormalities. Inversion of the T and P waves sometimes immediately followed an infarction of a small pulmonary vessel, and the appearances simulated those of posterior infarction. It might be reasonable to ask the pathologist, in cases where even with the best technique he obtained a negative picture, to look for small emboli in the further branches of the pulmonary artery.

Dr. JAMES MCDONNELL said that in two cases of coronary thrombosis he had demarcated with a stethoscope what he described as a "dissed" or dead area, giving absolutely no sound at all, over the muscle affected by the infarction. He suggested that this might prove to be a useful sign.

Dr. WILLIAM EVANS declared that the condition should be called cardiac infarction and not coronary thrombosis, first because of the frequent absence of thrombosis and secondly because syphilitic infarction was well known to occur without thrombosis. It was necessary for the benefit of the student to distinguish between the angina of ischæmia and that of infarct. Cardiologists were familiar with the patient who had a short history of attacks of angina pectoris of effort and who showed no clinical signs or symptoms of cardiac infarction but whose electrocardiogram followed its typical curve. Differential diagnosis could not in future be considered definite without an electrocardiogram. Stress might have an influence on the formation of atheroma. He suggested six weeks rather than two months as a minimum rest period.

Dr. ERIC GARDNER said that in rupture of the left ventricle there was often evidence that the process had continued for some days. Cold weather might precipitate the rupture, presumably by increasing the blood-pressure. Weather conditions might adversely affect an infarction which would otherwise have cleared up and given rise to the extraordinarily thin scar which was sometimes seen at autopsy four or five years afterwards. He always gave half a grain of morphia to begin with and repeated it in half an hour if the pain had not subsided, giving a third injection also if necessary. The results of this massive morphia treatment had been good. Indigestion and flatulence were constant forerunners of coronary thrombosis. The history was often first a flatulence which the patient treated with sodium bicarbonate; secondly what he called dyspepsia and treated with a MacLean powder; and thirdly a final attack of dyspepsia which came to the consulting-room as coronary thrombosis.

Dr. BEDFORD, in reply, said that the first electrocardiogram was best taken on the fourth, fifth or sixth day. The physician must advise what he thought was safe, not tell the patient how foolish he might be with impunity.

Dr. SIMPSON, also in reply, said that he had known a few cases under 30 and that cases between 30 and 35 were not uncommon in men, but that he had never seen one under 40 in a woman.

ROYAL SOCIETY OF MEDICINE

SECTION OF PROCTOLOGY

AT a meeting of this section held on March 8, with Mr. J. P. LOCKHART-MUMMERY in the chair, a discussion on

Megacolon

was opened by Prof. E. D. TELFORD. He classified these cases tentatively into congenital and adult types; inheritance was probably not the whole explanation of the adult types because in children the condition was commoner among boys (about 3 to 1) whereas women predominated among adult patients, in whom such factors as bands, kinks, and valvular obstruction might play a part. Prof. Telford had performed lumbar-cord ganglionectomy on 2 men and 4 women with only temporary benefit, and the same operation on 6 young women with constipation and a large ptosed colon had given disappointing results.

He proposed to discuss mainly the *congenital* megacolon of childhood. Control of the mechanism of peristalsis by the autonomic system was probably not complete because smooth muscle deprived of nerve impulses was still capable of action; the conception of the sympathetic as the "filler" nerve and of the parasympathetic as the complementary "emptying" nerve was too simple because there was evidence that nerve influence varies with the state of a viscus at any given time. However, clinical, experimental, and postoperative evidence supported the view that megacolon results from autonomic imbalance producing achalasia with resultant colonic dilatation. In his view the site of achalasia was more often at the pelvi-rectal junction than at the anal sphincter, but the mechanism of achalasia was not clear. Overwork and distension of the bowel were associated with hypertrophy and fibrosis, which affected adversely the prognosis of operations on the nerve-supply. If at operation a brisk response was obtained on light pinching of the bowel with dissecting forceps a good result might be expected. According to Finney the plexuses of Meissner and Auerbach were histologically normal in megacolon. In diagnosis constipation was the outstanding symptom, but certain cases of what might be called "retention colitis" had diarrhœa with 5–6 small liquid motions a day. Children with megacolon were undersized, thin, sallow and very lethargic: the anæmia, loss of weight, distension and soft palpable masses in the abdomen might simulate tuberculous peritonitis. The diagnosis was easily made by a radiogram after a barium enema or meal, but this was a measure only of distensibility; function was more important.

While minor cases might be kept well by constant medical supervision, operative treatment was indicated in the more severe cases requiring repeated enemata and going backward in health and energy. In children sympathectomy had now replaced short-circuits and resections. The point at which the sympathetic supply was best interrupted must be considered in relation to the anatomy of the sympathetic supply to the left side of the colon, which was affected in over 70 per cent. of cases. Operation must be bilateral, the colon being an organ of medial development, and Prof. Telford explained his reasons for practising bilateral division of the lumbar splanchnics by a transperitoneal approach; to avoid regeneration it was probably better to remove the portion of ganglionated cord, say L.1 and L.2, from which the

lumbar splanchnics arose. Bilateral section of the white ramus of the first lumbar nerve was too formidable, and interference at the point of origin of the inferior mesenteric artery was liable to cause sexual disability in boys and the destruction of parasympathetic fibres. His own results from division of the lumbar splanchnics showed that of 5 boys and 4 girls, aged 4–16 years at operation between 1932–36, 6 were in excellent condition, being well grown and requiring no purgatives, 2 were partially cured, requiring a mild laxative or liquid paraffin once or twice a week, and 1 was a complete failure; the last was a mental defective with bad home surroundings. A boy aged 8 who was sallow and lethargic on admission, and attended hospital for periods of three months to unload the bowel, eventually had a section of the lumbar sympathetic cords: since 1932 he had not required purgatives and now played football. Prof. Telford demonstrated radiograms of the effect of operation: the pelvic colon, seen as a massive lump on the right side of the abdomen, was in its proper position 3 months after operation, where it remained 2½ years later, although still enlarged.

Since Merle Scott and his co-workers had reported that patients given spinal anæsthesia for diagnostic and prognostic purposes had been "practically completely cured" without operation, Prof. Telford had tried this method between January and July, 1938, on 4 cases of advanced severe megacolon and these had remained quite well up to the present. Decicaine had been used, with level of anæsthesia up to T.3. A boy aged 12, whose period between bowel actions had previously been 2–3 weeks, had not required purgatives since treatment in January, 1938, and was now actively engaged in sports, particularly swimming. A year after treatment the pelvic colon was still dilated but functioning perfectly. It was hardly justifiable to report results before the lapse of 2 years but the method merited further trial.

Sir LANCELOT BARRINGTON-WARD described his experiences with *congenital* megacolon. Earlier results with colectomy had usually been disappointing although he had evidence of symptomatic cure of 2 boys, aged 3 and 8, on whom the operation had been performed in 1913 and 1928 respectively. He had achieved consistently satisfactory results only since attacking the sympathetic supply of the colon. More than two-thirds of his cases had been operated upon more than 3 years ago: of the total of 31 cases (21 males) aged between 5 months and 12 years, 24 were alive and well and 7 were dead. Since presacral sympathectomy (excision of the presacral nerves and inferior mesenteric ganglion) might cause sterility in males he had limited it to females, later giving it up altogether because his results by abdominal ganglionectomy (2nd, 3rd, and 4th ganglia) were better. There had been no selection of cases—many were severe and 3 were aged 6 months or under: medical measures were exhausted before operation. The only mortality had been with presacral sympathectomy: 2 died of the operation, from pulmonary collapse and pneumonia, and 5 died 3 months to 1 year later after a second operation for volvulus or obstruction. The 24 patients had all been well for 3 years or more after operation. The return of good function was the most certain expectation (the bowels mostly moving daily without purgatives) although in some cases 2–3 weeks might elapse before such regularity was established. Abdominal distension took longer to improve owing to fibrosis: the condition was arrested rather than cured, and the younger the child and the less the deformity the better the result. The danger of volvulus was an anxiety, and relapse during the early postoperative months was not uncommon. During the first few months a daily action of the bowels might be ensured by a small dose of senna and paraffin or if necessary a small enema. That heredity played a part was suggested from the fact that 1 girl had an aunt who died from the disease, and that 2 patients were brothers with a third younger brother awaiting operation. In infants the disease was limited to the hind-gut; the fact that dilatation of the rest of the colon was secondary made it unnecessary, in his opinion, to divide the sympathetic supply on the right side. Sir Lancelot referred to an infant, aged 6 months, with extreme constipation and abdominal distension, who had remained at his birth-weight of 8 lb., and had subsisted for 3 weeks on subcutaneous saline before abdominal sympathectomy: within a month he had put on 2 lb. and thereafter progressed more or less normally.

Prof. J. PATERSON ROSS said that at the surgical professorial unit at St. Bartholomew's Hospital they had treated 6 cases of infantile megacolon by sympathectomy. Surgery was performed only after failure of thorough conservative treatment in cases dating from early infancy with considerable dilatation of the colon. Evidence of neuromuscular defect in bladder or ureters was an additional indication. A barium enema (by showing the degree of distension which caused no discomfort) and spinal anæsthesia were valuable aids in the selection of cases. Operation should not be delayed after the age of 5–6 years because only in young children was the normal bowel calibre likely to be restored. He thought that the condition might perhaps be due to a gap between the vagal and sacral supplies, thus allowing sympathetic predominance in a limited portion of bowel: dilatation of the colon was unlike that produced by mechanical obstruction. He might in future try a radical splanchnic neurectomy (division of the 3 thoracic splanchnic nerves and excision of the upper 2 lumbar ganglia by extraperitoneal approach) which gave the greatest chance of cure and was without apparent ill effect on other viscera, excepting the seminal vesicles: the choice lay between trying to cure the disorder and preserving the power of procreation. When the sigmoid alone was affected lumbar splanchnic resection might be satisfactory.

Sir ARTHUR HURST had records of 11 cases in children (9 were boys) and 38 adult cases (20 were males). He did not believe that there was a pelvi-rectal sphincter (a sigmoidoscope passed easily in children and there was no narrowing) and he thought that in megacolon the anal sphincter failed to open normally on contraction of the rectum. Cameron (2 cases), Edsall (8) and Roberts had reported fibrosis of Auerbach's plexus. Toxic symptoms occurred only in children and adults taking aperients, which should not therefore be given. Radiologically the pelvic colon was seen on the left or right side underneath the diaphragm: a radiogram was shown with a bilateral gas-containing cavity. His cases, which were less severe than some of those mentioned earlier, had been satisfactorily treated by dilatation of the sphincter ani with a bougie for ¼ hour each morning at first, the frequency gradually being reduced to once every 3 months. Volvulus had occurred in several long-standing cases.

Mr. J. B. OLDHAM had treated 7 cases of megacolon, 2 of which had been operated upon over 10 years ago. One (followed up since 1919), after initial acute intestinal obstruction, was readmitted continuously for bowel resections and dilatation of the anal

sphincter: a bilateral extraperitoneal lumbar ganglionectomy was performed in 1928 and the patient, now 24, was perfectly well, in fact vivacious, and the mother of two children. He considered this form of operation to be the best and safest, and that resection of the inferior mesenteric plexus and presacral nerve and transperitoneal operation should be given up. He recalled a case which improved temporarily after spinal anæsthesia (in 1926) but operation was ultimately necessary: however, in view of Prof. Telford's remarks he would try the method again.

Sir CHARLES GORDON-WATSON had resected the pelvic colon in 3 cases with satisfactory results: one was a woman aged 40 who had been pot-bellied since childhood and subsequently married.

Prof. TELFORD, in reply, suggested that spinal anæsthesia might bring the two halves of the system "into step" again by the shock, the converse effect being illustrated by a case of mega-œsophagus in a patient who had been quite well before dental shock. He referred to an unpublished case of mega-œsophagus which he had treated with spinal anæsthesia in July, 1938. The patient took the common hospital diet on the day following the anæsthetic, there had been no dysphagia since, and he had returned to work.

LIVERPOOL MEDICAL INSTITUTION AND THE MANCHESTER MEDICAL SOCIETY

AT a meeting of these societies held at Liverpool on March 2, with Dr. WILLIAM JOHNSON, president of the Liverpool Medical Institution, in the chair, Mr. H. T. SIMMONS (Manchester) read a paper on

Congenital Megacolon and its Treatment

The condition, he said, was a congenital high-grade dilatation of the colon with thickening of the coats, especially the muscular layer. Although there was retention of large quantities of fæcal matter there was no obstruction to the lumen of the bowel and no evidence of the formation of any sphincter. The pelvic colon was the main site of the disease in some 70 per cent. of cases. Microscopic examination showed hypertrophy and chronic inflammation, and although Cameron had stated that Auerbach's plexus was degenerated, this had been denied by many subsequent observers. Until recently the operation of Telford and Stopford had been the best method of treatment, but in the last twelve months a high spinal anæsthetic without any other measures had given good results. This appeared to provide strong evidence in favour of congenital megacolon being a true achalasia, and if the value of this treatment proved to be permanent it was a distinct step forward in treatment, since sympathectomy in young children was a major operation.

Mr. J. B. OLDHAM said that he had treated 7 cases of Hirschsprung's disease by lumbar sympathectomy, 2 of them over ten years ago. He did not anticipate that spinal anæsthesia would be universally successful.

Dr. R. ELLIS (Manchester) read a short paper on

P.M. Findings in Cardiovascular Disease

Of the 50 cases in his series 37 were males and 13 females, with ages ranging from 10 weeks to 70 years; the average age of the males was 56, and of the females 54 years. Disease of the coronary arteries was responsible for 31 of these deaths, in 17 of which there was demonstrable arterial occlusion; 11 of these 17 died within a few minutes and the longest recorded interval was four hours after the onset of symptoms. Of the 14 cases where coronary disease was apparent, but no obstruction was found, a larger proportion died in bed. Thus, of 31 cases of coronary artery disease 17 had demonstrable obstruction; 20 died very rapidly, and in the remaining 11 death occurred within a few hours of the onset of symptoms. In 5 cases there had been previous cardiac infarction. Complications found with non-obstructive atheroma included dissection aneurysm of the aorta, ruptured aorta and a ruptured coronary artery. In 2 cases of coronary occlusion the left ventricle was ruptured.

Other lesions found in this series included 4 cases of syphilitic aortitis, 1 with a ruptured aneurysm; 5 of fatty infiltration of the myocardium; 3 each of mitral stenosis and infective endocarditis; 2 of obliterative pericarditis; 1 of congenital defect of two aortic cusps; and 1 of large pulmonary embolus secondary to peripheral thrombophlebitis.

NEW INVENTIONS

THE "FIRLE" EYE-MAGNET

THE magnet is a well-established instrument for the removal of iron or steel foreign bodies from within the eye, but few surgeons use a magnet for superficial foreign bodies, probably because it is quicker to use a spud than prepare an electromagnet, and until now ordinary magnets have been too weak for effective use. Now Messrs. Gowllands of Croydon have manufactured an effective hand-magnet which should be of much service to ophthalmic

surgeons working in districts where iron and steel works are numerous and foreign bodies in the eyes of workmen common.

This magnet is a cylindrical steel bar 4 in. long and ½ in. in diameter, weighing 4½ oz. It is made of a steel alloy with high cobalt content and has a lower density and a much greater lifting force than the old carbon-steel magnets. It does not suffer from ageing, and is stable at fairly high temperatures and under ordinary mechanical shock. It is also stated to be very resistant to artificial ageing by external magnetic fields such as direct-current apparatus or lightning. Its lifting power is amazing: a 1 lb. weight from the kitchen scales was lifted and held with ease. One pole of the magnet is drilled to receive interchangeable pole pieces with probe ends; of these there are four. The whole is chromium-plated. The pole pieces may be boiled, but the magnet is better sterilised by soaking in alcohol or 5 per cent. carbolic solution.

The instrument was supplied to me by Messrs. George Spiller Ltd., of 32, Wigmore Street, London, W.1.

N. BISHOP HARMAN, M.B. Camb., F.R.C.S.,
Consulting Ophthalmic Surgeon to the West London Hospital.

THE AIR-RAID

A series of articles on medical organisation and surgical practice in air attack by
P. H. MITCHINER, C.B.E., T.D., F.R.C.S., *and* E. M. COWELL, D.S.O., T.D., F.R.C.S.

XI—WOUNDS OF HEAD, SPINE, AND PERIPHERAL NERVES

IT is the rule in general surgery to excise and suture all wounds, and nowhere is this rule so essential and successful as in the treatment of all wounds of the head and spine. It is true that in many cases damage to the central nervous system produces lasting and irreparable results, but relief of much suffering, limitation and amelioration of paralyses, and prevention of sepsis can be achieved by prompt excision and primary suture in all cases of wounds of the head and spine. It is common knowledge that patients suffering from both these classes of wounds stand transport badly; hence either they should be conveyed direct to the base hospitals for treatment or if they are operated on at a casualty hospital they must be retained there for at least ten days.

Head Injuries

Both clinically and pathologically head injuries fall into three great classes:—

(1) Those with no external wound—e.g., concussion, fissured fractures of the cranial vault or base.

(2) Those with an external penetrating wound, rapid pulse, usually unconsciousness, and an early onset of diffuse sepsis—a type generally fatal.

(3) Those with an open wound with or without extensive damage to the skull (depressed fracture) and underlying brain; these patients are generally conscious, with a slow full pulse, and sepsis tends to be localised—this type usually recovers, especially if operation is undertaken early.

These types will now be dealt with seriatim, but it must be realised that they may coexist, and moreover that in about 30 per cent. of such cases further wounds may be met with elsewhere in the body. The wearing of "tin hats" has considerably reduced the number of minor head wounds, but it is obvious that such a hat affords little protection from "H.E." or falling masonry and may indeed aggravate the wound by being driven into the skull.

CONCUSSION AND FISSURED FRACTURE OF THE SKULL

The signs and symptoms of concussion, accompanying fissured fractures, vary much in intensity according to the force of the injury and differ in no way from those seen in civil practice. As a general rule in war the concussion is severe, in contradistinction to those cases in which extensive skull wounds are present and the patient seldom complains of more than a localised headache in the early stages. Concussed patients are seldom so deeply unconscious that they will not swallow if food is placed in the mouth or drink slowly administered, and they may respond if spoken to slowly and loudly. Retention of urine is common, and a full bladder often produces restlessness and attempts to rise from bed—for the purpose of emptying the bladder. These signs may be mistaken for cerebral irritation and lead to the administration of morphine, when all that is necessary or advisable to quieten the patient is to give him a urinal and aid him to pass water. Similarly, anal sphincter control and constipation often cause discomfort and restlessness, which may be satisfactorily relieved by a glycerin suppository and a bedpan. Loss of sphincter control, slow snoring breathing, and a rapid running pulse are the signs of cerebral compression usually due to diffuse meningitis; in the early stages the pulse may be slow and full, in which event an intracranial hæmorrhage is to be suspected.

Treatment of concussion.—In all such cases the patient must be kept as still and quiet as possible and external irritation avoided; bowels and bladder need attention; and most of these patients swallow automatically if fluids are gently run into their mouths. Dentures must always be removed immediately and should be placed in one of the patient's pockets. If there is great restlessness morphine sulphate gr. $\frac{1}{4}$–$\frac{1}{3}$ or hyoscine hydrobromide gr. 1/100 may be given hypodermically. These patients need a great deal of careful watching and nursing and, unless some complication, such as intracranial hæmorrhage, is suspected, are best evacuated direct to a base hospital.

Fracture of the skull often complicates these cases but is unimportant in itself compared with the concussion resulting from the cerebral damage, though it increases the risk of subsequent meningitis by infection from the nose, nasopharynx, or ear. Bleeding from the ear is an indication to clean the external meatus gently and to plug it lightly with clean wool. Similar treatment should be given in cases of bleeding from the anterior nares. When blood is swallowed it is generally subsequently vomited as clots or "coffee grounds," and in all cases of fractured base involving the middle fossa with bleeding from the posterior nares or nasopharynx the head must be turned to one side and orderlies warned to keep a sharp eye on the patient lest he choke himself when vomiting. It must be borne in mind that a patient may be concussed and vomit blood from a coexistent wound of the stomach.

Intracranial hæmorrhage is more likely to cause cerebral compression in cases of fissured fracture and concussion due to "blast" than in cases in which extensive skull defects allow the blood to escape externally. The blood usually comes from torn pia arachnoid vessels and is intradural and diffused over the surface of the brain, but rupture of the anterior branch of the middle meningeal artery due to a blow on the temple will produce an extradural hæmorrhage.

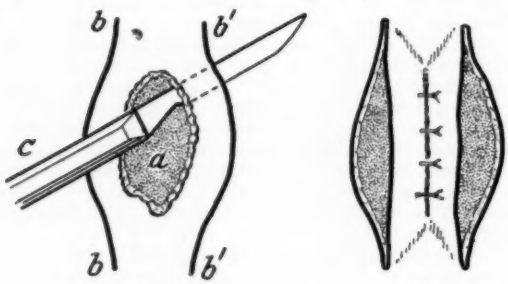
Intradural hæmorrhage usually occurs rapidly and, coming on in a concussed patient, may escape notice unless the patient is carefully watched. A deepening of unconsciousness, with flaccid paralysis of limb and loss of sphincter control, often accompanied by snoring respiration, with sagging cheeks, and even Cheyne-Stokes breathing in severe cases (which is of grave prognostic significance), together with a slow full pulse, which later becomes rapid, running, and irregular, are all signs of the onset of compression. Lumbar puncture will show blood in considerable quantity in the cerebrospinal fluid. It is not advisable in these cases to attempt any operation to relieve the pressure, for the delicate veins only bleed afresh and more freely. Lumbar puncture may be used for this purpose but is liable to cause fresh bleeding unless used with great caution. Probably the best line of treatment is the intravenous injection of 10 c.cm. of a 30 per cent. sterile saline solution to produce dehydration or a fall in pressure, but the

prognosis is poor, and a fatal result is generally to be expected.

Extradural hæmorrhage results from a sharp blow or wound fracture on the side of the skull and causes a slow bleeding from the torn middle meningeal artery on the outer surface of the dura mater. Concussion may be present but often is very slight, and the patient appears normal (lucid interval), after which facial tingling and twitching may be noticed on the side opposite the skull lesion. This passes to paralysis at the same time as the arm shows similar signs of irritation, which in their turn pass to palsy as the leg becomes firstly irritated and later paralysed. In the meantime the patient becomes drowsy and ultimately unconscious. Treatment consists in making a flap or vertical incision above the ear and detaching or splitting the temporal muscle; the trephine is then used, the pin being placed on the bone 1½ in. behind and above the external angular process of the orbit, and a circle of bone is removed, whereupon clot exudes. This clot is cleared, the opening being enlarged as necessary, usually in a downward direction, to expose the canal in which the artery lies in the parietal bone, at which spot it is generally torn, and the hæmorrhage is arrested either by plugging or crushing the canal or ligaturing the vessel. The results of this operation are disappointing, and many patients die, for there are often accompanying intradural bleeding and severe damage to the brain.

SCALP WOUNDS AND PENETRATING LESIONS OF THE SKULL AND BRAIN

Scalp wounds may be gutters, clean cuts, two separate wounds, or lacerated wounds. They all bleed very freely. In all cases hæmostasis must be secured after the scalp has been shaved for at least 3 in. from the edges of the wound. Hæmostasis is best secured by local infiltration of the scalp with Barker's solution or a ½–2 per cent. solution of procain hydrochloride to which a 1 in 1000 solution



1 2

Sargent's method of closure of scalp wound. 1. Formation of pedicled flaps: (*a*) area to be covered; (*b*) and (*b′*) two counter-incisions through half the thickness of the scalp; (*c*) scalpel cutting flap. 2. Suture of flaps over original wound.

of adrenaline has been added in the proportion of 15 minims to 100 c.cm. Alternatively a piece of rubber tubing or a Kocher all-metal tourniquet may be applied round the head. The edges of the wound are then cleanly excised, and the skull is carefully explored for evidence of any fissure or other bone injury—damage will be detected in a large proportion of these cases and must be dealt with as will be described later. The edges of the wound are then firmly sutured, if this can be done without undue tension, and it is wise to use mattress sutures so as to secure hæmostasis. Drainage is not advisable and should never be used, even when damage to brain or bone has been repaired.

In some extensive wounds of the cranial vault it is impossible to cover the wound by ordinary skin suture after the necessary excision and removal of fragments of bone. Some covering must be provided; otherwise sepsis is inevitable. The method of closure in these cases, which was devised by Sargent, is ingenious and useful. Two counter incisions are carried through half the thickness of the scalp outside the wound area. The superficial half of the scalp between the wound and each counter incision is raised as a pedicled flap on each side (fig. 1). The two pedicled flaps are then approximated and held in position by a few sutures, leaving two crescentic raw areas on either side of the original wound, consisting of the deeper half of the scalp only (stippled in fig. 2). The scalp is so vascular that little trouble is experienced in healing, and the raw areas rapidly epithelialise.

Perforating wounds of the skull and brain result from high-velocity bullets, in which event they are usually through and through, or from small fragments or sharp splinters of bomb or shell casing, when often there is only one wound and the missile is retained in the cranial cavity. Owing to the severe disintegration of the brain resulting from the force of these missiles, the prognosis in these cases is very grave, most of them proving fatal, so that in a rush of wounded no undue time should be wasted in operating on such patients at the expense of delay to other patients with a better prognosis. Such patients are usually unconscious owing to increased intracranial pressure from hæmorrhage, traumatic œdema of the brain, and, later, septic meningitis, the small size of the wounds and their blockage with debris preventing the escape of contents. Often the ventricles are penetrated, usually shown by very high temperature. The escape of cerebrospinal fluid from the wounds is rarely seen, but lumbar puncture yields only a few drops of fluid, often blood-stained; such cases are nearly always fatal, and no time should be wasted on them by the surgeon. In all cases the whole scalp should be shaved; otherwise a small wound of entry may escape notice. The wound of exit may show starring and eversion with extrusion of shreds of brain, bone, and muscle.

Bruising of the skull.—A bullet may run round the skull without damaging the bone but causing concussion and severe damage to the brain from its impact. In these cases it is usually safer to perform a craniotomy if the patient continues unconscious after a few hours, or if there is a subpericranial hæmatoma, especially if the patient complains of persistent localised headache in its vicinity. Treatment consists in excision of the wound, removal of all loose fragments of bone, and careful trimming of the bone edges with a craniotomy forceps. If the dura mater is intact—which is unlikely—it is best left unopened (Sargent) unless it is bulging or not pulsating, when it should be explored through a crucial incision and stitched up after operation. If the dura mater is perforated—which is usual—bone must be removed to leave two inches of undamaged dura exposed round the wound, the edges of the dura being then excised and any obviously damaged brain gently curetted or sucked away along the course of the wound track. Pieces of depressed bone and clothing must be carefully sought for and removed with the greatest gentleness, and if the projectile is found in situ during this gentle cleansing it also must be picked out. No prolonged search must be made for deeply buried or distant fragments, which often cause

no trouble or, at the worst, localised sepsis (brain abscess) and can be removed later, if necessary, after radiography. Moreover, search both damages the brain unnecessarily and spreads sepsis. The dura is closed if necessary by a graft and the skin wound sutured without drainage. (Details of the operation are given below.)

Radiography and time of operation.—Some surgeons advocate the routine radiography of all these cases to localise the missile before operation, but this is not feasible if there is a rush of wounded, and much valuable time may be wasted. It is essential that, if sepsis is to be prevented, operation shall be undertaken at the earliest possible moment.

Wounds of venous sinuses.—Intracranial hæmorrhage may result from wounds of the large venous sinuses, which may be perforated by small fragments. Large wounds are rapidly fatal. The superior longitudinal sinus is not so likely to be wounded when a "tin hat" is worn. The clinical signs are very characteristic and consist of a local wound near the vertex, which usually oozes blood freely, and a symmetrical and more or less complete spastic diplegia of both lower limbs. The sigmoid sinus is less often affected and leads to signs of cerebellar ataxy on the same side together with nystagmus. Treatment consists in craniotomy alongside the wound, the superficial part of which is excised in the scalp incision. The undamaged dura mater is opened, blood evacuated, and the sinus wound or wounds closed. Very small wounds can be closed by suture of a fragment of muscle over the holes. Larger wounds can be closed by the application of fascia (fascia lata is best), which adheres readily but is better stretched in situ. Plugging should be avoided at all costs. The damaged dura is then excised and closed, if necessary by a fascial graft, and the skin wound sutured without drainage.

DEPRESSED FRACTURES

Depressed fractures of the skull are the commonest injury seen as a result of wounds. They are always compound and associated with severe laceration of the scalp. Since they commonly result from bomb or shrapnel bursting near by, other wounds are usually present, often involving the face and jaws. The mortality in such cases is bound to be heavy. Operation must be prompt if it is to prevent the onset of sepsis, but it must be realised that sepsis is often localised by definite but delicate adhesions of the pia arachnoid to the dura mater, and where localised sepsis is present great care must be taken not to disturb these easily broken down adhesions; otherwise generalised meningitis and death will follow.

Fungus (hernia) cerebri.—Damage to the brain is rapidly followed by an acute spreading œdema, the softened and disintegrated brain tissue acting as a foreign body, and depressed fragments of bone by their pressure seriously interfering with the cerebral circulation and thus aggravating the condition. This œdema and the raised intracranial pressure cause the dead brain tissue to be extruded through the wound as a fungus (hernia) cerebri. This condition is further aggravated and increased by the raised pressure due to local sepsis (abscess) subjacent to the wound, by generalised meningitis, or by intracranial hæmorrhage secondary to these. This hernia consists of dead brain tissue and granulations and can be removed with impunity to expose adequately and deal with the underlying sepsis.

Clinical signs of depressed fracture.—A scalp wound is always present, usually lacerating, with obvious bone damage in its depths. Rarely, however, the outer table may show bruising only (subpericranial hæmatoma), when the inner table, always more extensively broken up (as is seen when a blow is struck, on the outer surface of a glazed earthenware teapot), is likely to be fractured and the underlying brain thereby damaged. It is most unusual for these cases to show any signs of concussion, owing to the opening allowing of escape of contents and no rise in intracranial pressure, but occasionally concussion may be present in a mild degree when the dura mater is intact. In many patients there are no cerebral signs save a slight headache, but in others paralyses of limbs and anæsthesia will be met with as a result, in most cases, of circulatory disturbances due to the pressure of indriven fragments of bone—a clear indication of the urgent necessity for prompt operation. In such patients immediate relief follows craniotomy and relief of pressure, but no such happy result is to be anticipated when brain centres have been destroyed. Since, however, no prognosis can be given as to how much recovery will follow operation, this must be undertaken promptly in all these cases.

Treatment.—The whole scalp must be shaved and cleaned and the area round the wound, and wide of it, infiltrated with a ½ per cent. solution of novocain solution to which has been added a 1 in 1000 solution of adrenaline in the proportion of 15 minims to 100 c.cm. to produce hæmostasis and anæsthesia. In these patients, who are usually conscious, gas-and-oxygen anæsthesia is advisable in addition. The edges of the wound are then cleanly excised and, according to the underlying bone damage, extended into a triradiate incision or left in the centre of a reflected flap of scalp. The underlying skull damage is now carefully examined, all loose and depressed fragments of bone are removed, and the edges of the skull are smoothed down with a craniotomy forceps, care being taken to expose and remove any fragments of the inner table which may be lying under intact outer table (such fragments are often present and must be looked for). The dura mater is then carefully examined for tears.

At operation one of two conditions will be found: (1) the dura mater will be intact, or (2) the dura will be opened, and brain tissue may be extruded.

(1) With regard to cases with intact dura there are two opposed schools of surgery. Harvey Cushing urges that the dura should be opened in all cases, for by this means alone can one learn if and to what extent the underlying brain is damaged. On the other hand, Sargent and Holmes, who had great experience of these cases in the late war, urge most strongly that an intact dura should not be opened, because of the fear of introducing sepsis into the brain. Our own practice, and that of many surgeons in the late war, is to leave the dura if it appears normal and is not unduly tense or bluish, but, if these signs are present or pulsation is absent, it should be opened by a cruciate incision.' Before this incision is made, bone must be removed to expose at least an inch of normal dura round the tense, bluish, or pulseless area, which is then opened in a cruciate manner, underlying clot or dead-white and softened brain tissue being removed by gentle suction or, if this is not possible, by curettage with a blunt spoon. The dura is then carefully closed with catgut sutures and the scalp wound closed with mattress sutures *without drainage*. It is surprising how readily large deficiencies of scalp will be obliterated, if the triradiate incision is used; and here, owing to the vascularity of the tissues, it is permissible to close under more tension than elsewhere in the body.

(2) When the dura is lacerated, it is well, if it can be done without losing time, to have had the patient radiographed, before being brought to the theatre, to ascertain if a missile is present and to localise it as far as possible; but no undue time should be wasted on this examination, for it is essential to operate quickly on such cases so as to minimise the risk of sepsis and permanent paralysis. At least two inches of healthy dura must be exposed round the wound, bone being clipped away with a craniotomy forceps for this purpose. All torn edges of dura and protruding brain fragments must be cut away and any embedded bone fragments, cloth, or projectile picked out. The adjacent brain tissue will be found softened and dead-white and can with advantage be explored gently by and sucked out through a rubber catheter. The missile will have penetrated deeper than any bone fragments or foreign bodies carried in, and it may be felt by the catheter or probe and can then be picked out with a curette, which does less damage than forceps. Some surgeons recommend exploration with a finger, but this is liable to damage brain tissue and spread sepsis and is not to be lightly undertaken. The dura is then closed; usually a fascial graft (fascia lata) is necessary to achieve this, but simple suture may suffice. The scalp wound is closed without drainage.

Craniotomy.—Radiography to ascertain the presence of a missile and to localise it, if possible, should be undertaken before operation. Craniotomy should be performed promptly in all cases of extradural hæmorrhage, depressed fractures, and penetrating wounds when there is hope of the patient's survival—i.e., when the pulse is still slow and full and Cheyne-Stokes respiration has not become established. In all cases the entire scalp must be shaved, the area round any wound or wounds infiltrated with Barker's solution (or a ½–2 per cent. solution of novocain solution in normal saline, with 15 minims of a 1 in 1000 solution of adrenaline added to each 100 c.cm.), and the edges of the scalp wound excised. It is generally most expedient to extend this by triradiate incisions, for it facilitates subsequent suture while giving as good an exposure of the skull as turning down a flap round the wound. The skull is examined to ascertain the extent of bone damage, and the loose and indriven fragments of bone are removed and the bone edges smoothed and further removed, if necessary, with craniotomy forceps. When no bone wound exists, as in extradural hæmorrhage, the skull will be opened by a 1 in. trephine appropriately placed (see above)—in the case of a small bone wound on sound skull alongside the puncture. Some surgeons prefer to raise a bone flap including the bone deficiency, but this is difficult except for the skilled cerebral surgeon and may waste much time. The dura mater is then examined. If it is undamaged it may be opened if necessary. If it is damaged, bone is removed to expose two inches of healthy dura round the wound, the edges of which are then excised. A cruciate opening is next made in the membrane. Extruded brain is snipped away and any obvious bone fragments, foreign bodies, or missiles removed. Harvey Cushing recommends the gentle insertion of a no. 10 soft rubber catheter along the wound track, when hard foreign bodies can be detected by touch with minimal damage to brain tissue, and, if a glass syringe is attached to the outer end of the catheter, the white pulped brain tissue round the track can be sucked up through it, whereas normal brain tissue cannot. Hard objects may possibly be extracted thus, but this rarely happens; they can usually be seen and gently extracted with a blunt curette, inserted alongside and parallel with the catheter, by drawing them up between the curette and the catheter. This method does far less damage than does the most gentle exploration with a finger, which in our experience is rarely necessary and not so effective as a catheter. The missile will be found deepest embedded and, if not readily detected, is much best left in situ, whence, if it causes local sepsis, it can be removed subsequently. The dura must now be closed, if necessary by a fascial graft (best taken from the fascia lata of the thigh) and the scalp closed by mattress sutures, *without drainage*.

Sepsis.—In all head wounds drainage must be avoided at all costs. Should sepsis supervene, one or more stitches must be removed from the lower end of the scalp wound. High temperature, rapid pulse, loss of consciousness, and convulsions indicate diffuse meningitis. In this event the dura must be reopened, and Prontosil, 2 tablets thrice daily, may be given by mouth, but the prognosis is hopeless. More commonly a cerebral abscess gradually develops in the depth of the brain, often round a retained missile, and shows the signs described in any textbook. The dura may have to be opened owing to increased pressure before it is advisable or possible to undertake an operation for drainage of the abscess or removal of the missile, and in these cases a fungus cerebri will develop, which may be dressed with a 15–20 per cent. sterile saline solution.

Injuries of the Spinal Cord and Column

In war injuries of the spinal cord, like those of the brain, pressure of indriven fragments of bone causes extensive circulatory disturbance and suggests more extensive damage than is really present. Removal of this pressure will at once relieve the troubles due to circulatory disturbance, but not those due to destruction of the cord. Since the cord, like the brain, cannot regenerate, there will be no ultimate return of function if the cord is completely destroyed or the circulation not promptly restored. The cord proper ends in the lumbar enlargement opposite the first lumbar vertebra. Below this level the spinal canal is occupied by the cords of the cauda equina, peripheral nerves capable of regeneration if sutured; therefore the prognosis of wounds and fractures of the lumbar spine and sacrum are better than elsewhere, and operation is always indicated if any nerve lesion is detected in this region.

FUNCTIONAL PARAPLEGIA

It must not be forgotten that, especially in the stress of air-raids, functional lesions may be met with which in the hurry of a rush of casualties may be mistaken for an organic paralysis and even operated on to the very great detriment of the patient. In these functional cases one or all the limbs may be affected, irrespective of the point at which spinal injury is complained of. There is usually a localised point of acute tenderness and no obvious deformity. Radiography will not show any lesion. Anæsthesia, when present, is usually of the "stocking and glove" type corresponding to no definite spinal segmental distribution. Muscle paralyses are often irregular and tend to be spastic rather than flaccid, and sphincter control is never lost. No Babinski sign is present. The condition is likely to be confused with spinal concussion.

SPINAL CONCUSSION

A sharp fall on the shoulders, a blow on the back, a crush, or the impact of a high-velocity bullet or bomb fragment near the spinal cord, especially if a

vertebral body has been penetrated, may cause spinal concussion. There may be complete palsy or only paralysis below the level of the lesion, there is no localised point of tenderness, sensory disturbances correspond to spinal segmental distribution, and paralyses are regular and flaccid. Sphincter control is lost but tends to be regained rapidly, and a steadily progressive improvement of all signs and symptoms takes place in a few hours to a few days. Probably these cases have hæmorrhage into and round the cord in severe cases, and these may take some weeks to recover finally. It must, however, be realised, as observed by Makins, "that it should be clearly recognised that a general condition, such as is indicated by the term 'concussion of the brain,' is in no wise implied. The condition is really far more allied to one of contusion, and strictly localised to that portion of the spinal cord undergoing the destructive process." The treatment is complete rest, with catheterisation in the early stages if necessary. Most patients make a complete and comparatively rapid recovery.

FRACTURES OF THE SPINAL COLUMN

The spinal column may be fractured by crush accidents, due to burying or from falling masonry, or by bomb wounds, in which event they are often fatal from the extent of the visceral injuries which frequently accompany them. As with the skull, the bone damage is in itself unimportant, but in most cases the displacement at the time of fracture causes grave and permanent damage to the spinal cord. If such damage has not occurred, every effort must be made to prevent it. Even if the cord is already crushed, efforts must be made to prevent damage from any further displacement of bone. To this end the *first-aid treatment* is mainly directed, and all patients with fracture or suspected fracture of the spine should be immediately turned rigidly face downwards to prevent rotation of the spine, for this position allows the vertebral bodies to sag forwards away from the cord and prevents any risk of further backward displacement and additional injury to the already crushed nervous tissue. The patient must be lifted in this prone position and transported thus on the stretcher, the shoulders, neck, and chest being supported on a cushion, and the legs tied together. If there is a wound, it should be dressed.

In the *casualty hospital* careful clinical examination, including radiography, should be made in all suspected cases of spinal injury in the reception-room, both for local signs in the spinal column and for general signs of damage to nerves below the level of the lesion. If any doubt exists, radiography is essential and must be done with the patient on the stretcher and without turning him.

Three types of fracture will be met with :—

(1) Fracture dislocation, usually simple.
(2) Compression fracture, always simple.
(3) Fractures of transverse processes, spines, and laminæ, often compound and the result of obvious bomb or bullet wounds. These are only important in so far as nerve damage has been or may be inflicted.

Fracture dislocation results from hyperflexion and is usually seen as a result of crushes from falling masonry or falls from an aeroplane. The patients are usually dead or die in a few hours or days if the lesion is above the upper dorsal region. Extensive nervous damage is the rule, there is loss of sensation and power below the level of the spinal damage, and at that level acute pain, usually referred, is often experienced as the result of pressure on nerves. Incontinence of fæces is common, and urine overflows from a full bladder if the lesion is above the lumbar region, but there is dribbling incontinence if the lesion is below that level. Bed-sores are common, and ascending renal infection is rapidly fatal in those cases in which a suprapubic cystostomy is not performed early. Sterile catheterisation is impossible in the rush of war surgery and nursing. The treatment of these cases with an efficient plaster jacket in hyperextension is the same as carried out in civilian practice. In a rush of casualties all such cases must be sent direct to a suitable base hospital for treatment.

Compression fractures usually result from a heavy fall on the buttocks from a height and are not uncommon after parachute descents and aeroplane crashes. Pain in the back and stiffness are the chief complaints, and nervous lesions if present usually result from pressure on the spinal nerves at the level of the lesion. All cases of falls with persistent backache should be radiographed, for this condition cannot be diagnosed otherwise, and by this means long confinement to bed and permanent backache can often be prevented. Treatment consists in the application of a well-fitting plaster-of-paris jacket with the spine in hyperextension, and all these patients should be sent to a base hospital for this treatment, because it is not urgent and has no place in the surgical procedures of a casualty hospital.

Fractures of the spine due to projectiles usually take the form of depressed fractures of the neural arches, spines, or transverse processes of the vertebræ, with considerable muscle damage and compression of the spinal cord by bony fragments, which, as in the brain, cause considerable embarrassment of the circulation and so increase the results of their direct pressure on the cord. Such fractures may occur at any level of the spinal column, and the nervous symptoms will vary both with the level and with the amount of pressure on and direct damage to the underlying spinal cord. It is important to ascertain whether or not the spinal dura has been opened by the projectile or perforated by depressed fragments of bone. Very important viscera lie immediately anterior to the spinal column and are often damaged by the projectile and fragments of bone with rapidly fatal results; hence the mortality-rate of spinal wounds is high, apart from the mortality-rate from respiratory, renal, and trophic lesions directly due to the nervous lesions.

Radiography is essential to identify and localise missiles and bone damage; for this purpose lateral and anteroposterior views are necessary. These patients do not stand transport well and should either be taken direct to a base hospital or, if operated on at a casualty hospital, detained for at least ten days thereafter. As a general rule all gunshot wounds of the spine should be submitted to early operation, unless the patient is obviously moribund, with the objects of preventing sepsis, removing pressure from the spinal cord, and preventing complications which result from nerve damage and threaten life. The dura mater may be either intact or perforated, the prognosis being far better in the former case; but in both the principles of operation are identical. It is particularly desirable that all patients with intense pain from pressure or evidence of partial conductivity of the spinal cord should be given preference and operated on as early as possible, for pressure causes circulatory disturbances, and the importance of early relief of this interference with the circulation of the central nervous system cannot be overestimated if a good result is to be anticipated from operation.

The skin having been purified, the whole area is deeply infiltrated with Barker's solution (see above) clear of the wound track—a procedure valuable both in procuring hæmostasis in the erector spinæ muscles and in diminishing shock. (It is wise also to give gas-and-oxygen or ether inhalation anæsthesia.) The wound and its track are then excised and explored down to the laminæ of the arches, and every effort is made to estimate the bone damage accurately. Free exposure is essential, and muscle should be extensively separated to ensure this. Depressed bone is removed, it being best to start by removing with laminectomy forceps a sound lamina either above or below the damaged ones, as may be most convenient. All depressed fragments are now removed; this is easily done on the posterior and lateral aspects of the cord but not so easily from the anterior aspect of the spinal theca and cord, for care must be taken not to damage the nerve-roots.

Search must be made in the canal for any foreign body or missile previously localised, and care is necessary in this both because it can easily slip up or down and pass from reach and because gentleness of handling is essential to prevent further damage to the cord; a curette is the safest instrument to use, and the value of previous localisation is obvious.

It may be found that the dura mater is intact, in which event no attempt should be made to open it, for there is sure to be an element of concussion and the relief of external pressure alone is usually sufficient to give relief to pressure from intrathecal hæmorrhage, which is best left to undergo absorption without any further interference; moreover, incision of the dura is liable to introduce sepsis. More often the dura is torn and lacerated, in which event the edges should be trimmed and excised and the condition of the cord and nerves ascertained.

In the lumbar region the filaments of the cauda equina should be sutured—a tedious task and one giving all too often most disappointing results, presumably because it is almost impossible to unite the correct distal and peripheral ends, but every effort should be made to do so. The cord and arachnoid space are gently washed, bone spicules and shell fragments removed together with any obviously separated pieces of cord, and the dura mater sutured or closed if necessary with a fascial graft taken from the aponeurosis exposed in the incision. The muscles are then allowed to fall into position and the fascial aponeurosis and skin closed without drainage.

Only when the body of the vertebra is severely crushed or there is a fracture dislocation is it necessary to fix the patient in a plaster-of-paris jacket after the operation. When complete section of the cord has taken place, no return of function is to be anticipated; but we do not agree with those surgeons who do not advise operation when there is total loss of conductivity of the cord, because usually, in the early stages at which these cases are seen, no opinion can be formed of the extent of the cord damage without direct inspection, for spinal hæmorrhage, concussion, and pressure from bone fragments may produce all the signs of a complete lesion. Immediate operation by relief of pressure and prevention of sepsis will allow restoration of function in these cases, whereas, if they are not operated on, complete loss of function persists permanently.

RETENTION OF URINE

In all spinal and many head lesions retention of urine, with all its attendant risks of infection, is common. Unless this retention is promptly relieved, back-pressure up the flaccid ureters causes renal embarrassment, and the ascent of infection from the stagnant bladder soon results in the death of the patient from surgical kidney and uræmia. This infection, although more prone to follow catheterisation, will often supervene without it, owing to the stagnation in bladder and bowel alike; moreover, under air-raid conditions, it is impossible to ensure regular catheterisation, especially with due aseptic precautions. In all such cases therefore a *suprapubic cystostomy* must be performed at the earliest possible moment and can with advantage precede craniotomy and laminectomy when there is retention of urine.

The Great War proved beyond doubt that these cases treated by early suprapubic cystostomy survive, whereas those treated by catheterisation, expression, and other means soon die from ascending renal infection. The operation is performed in the ordinary way, but as a rule no anæsthetic is necessary. If one is needed, local infiltration is sufficient. A small puncture is made in the distended bladder when it is reached through the middle-line incision; a De Besser self-retaining catheter is inserted, stretched on a metal probe; the aponeurosis and skin are closed round it and the catheter is strapped in. This should result in a watertight opening in the bladder.

Peripheral Nerve Injuries

Wounds or injuries of the peripheral nerves are common. Failure to recognise them and to operate early may lead to loss of man-power and much inconvenience to the patient. In air-raid surgery, however, owing to the presence of infection, it is generally wiser not to attempt nerve suture or grafting until the wound is soundly healed—perhaps several months later.

MORBID ANATOMY AND PATHOLOGY

Nerve injuries are generally found in complicating wounds involving other structures, such as bones and blood-vessels. In some cases a small fragment of bomb may penetrate or perforate a limb, injuring the nerve alone. The following lesions may be recognised: contusion, severance, and partial ablation. At a later date infective processes complicate the picture, and still later the injured nerves may be affected by callus or scar tissue.

Contusion.—The nerve becomes slightly swollen, with its sheath hyperæmic or infiltrated with blood. There is no loss of continuity of the nerve-fibres, but conduction of impulses is lost.

Severance.—The trunk may be cut clean across, as though divided by a knife. The ends do not retract to any extent. One case of shell wound of the sciatic nerve was operated on soon after the man was wounded, and the arteria comes was still spurting.

Partial ablation.—These are important wounds because the ends of the nerve are left widely separated, and a gap of several inches may be left.

CLINICAL EXAMINATION

All wounds of limbs should be carefully examined as far as possible in the reception-room and notes made of any defects in sensory or motor functions. A preoperative diagnosis of nerve injury will save the surgeon much time and possibly prevent the overlooking of an otherwise crippling condition.

OPERATION

If a nerve injury alone is suspected, the incision must be so planned that wide access is afforded. Many cases of nerve injury will be found in the routine examination of bomb wounds involving the soft parts or bones. If the nerve is merely contused, it

will rapidly recover if left alone. If the nerve is severed, simple suture gives good results. The suture line may be reinforced by a sleeve cut from a vein or by a free fascial graft, or the sutured part may be embedded in undamaged muscle. When the ends of the nerve are widely separated, dissection may be tried to free the ends to allow of coaptation without tension. If this fails, it will be best to wait until the wound has soundly healed before attempting any form of nerve-grafting.

After-treatment will include the ordinary principles of wound management, including splinting to avoid the over-stretching of paralysed muscles and the necessary electrical stimulation to maintain their vitality. When evacuated from the casualty hospitals these patients will probably be grouped in neurological base hospitals, where special treatment can be given. The after-treatment will often have to be continued for many months. In all nerves, the nearer the body they are divided, the longer will be the period before recovery is complete. Thus in the sciatic nerve divided in the upper part of the thigh an interval of 2½–3 months is to be expected before recovery takes place. In a similar wound in the upper limb this period is usually 12–18 months but may be slightly longer.

PROGNOSIS

The prognosis is always best after primary suture if no sepsis has intervened. It is never so good in delayed suture or sepsis, and no really good results are to be expected after nerve-grafting or implantation. The results are much better with some nerves than with others. An almost perfect result can be anticipated in the sciatic and musculospiral (radial) nerves when primary union has been successful, but in the median and ulnar nerves muscle weakness and sensory disturbances persist in nearly all cases.

REVIEWS AND NOTICES OF BOOKS

Yearbook of General Surgery

By EVARTS A. GRAHAM, M.D. Chicago, professor of surgery, Washington University School of Medicine; surgeon-in-chief, Barnes Hospital, St. Louis. London: H. K. Lewis and Co. 1938. Pp. 781. 12*s.* 6*d.*

THIS yearbook again gives an excellent review of the progress of general surgery during 1938. In an introduction the outstanding extracts are indicated; but there are innumerable interesting articles apart from these. The treatment of progressive ulceration due to the micro-aerophilic streptococcus by zinc peroxide and the treatment of wounds by urea are notable examples in the general part of the book. A simple and very practical continuous-suction apparatus is described. There are accounts of the results of the sulphonamide treatment of erysipelas, and of the combined treatment of burns with tannic acid and silver nitrate. Surgeons who have the management of fractures of the forearm and wrist will be interested in the method of extension of the fingers by plaited cane fingerstalls. There is an excellent review of the latest knowledge of cholecystography and accounts of the injection treatment of hernia and the modern treatment of pulmonary tuberculosis by apicolysis.

These articles have been selected almost at random to show that every surgeon, whether or not he is an industrious reader of current surgical literature, should possess this book. At worst it will recall to his memory papers he has forgotten; it is more likely to introduce him to at least some that he has overlooked.

Outline of Roentgen Diagnosis

Atlas edition. By LEO G. RIGLER, M.D., professor of radiology, University of Minnesota, Minneapolis, Minnesota. London: J. B. Lippincott Co. 1938. Pp. 212 and 227 figures. 30*s.*

THIS textbook, written for undergraduates who in a short time have to learn enough of radiology to make intelligent use of it as one of the diagnostic methods in medical practice, can be recommended as a simple exposition of a subject difficult to condense and clarify. The author does not propose to teach technique or to go into the finer points of interpretation or the rarer manifestations of abnormality, and within the limits he has set himself he has succeeded in giving much valuable information. The illustrations are all bound together, the text being continuous, so that constant reference from one to another is needed; but the radiograms are technically excellent and well chosen, and little of teaching importance has been omitted. A certain degree of dogmatism is permissible here in this type of book, but the classification of bone diseases is too arbitrary and occasionally, for instance in the matter of osteogenic sarcoma, some statements are open to question.

Besides the radiograms the illustrations include a number of drawings by Jean E. Hirsch who has developed an original technique. These are excellent in reproducing anatomical detail and satisfactory in illustrating fractures, displacements, and certain bone conditions, but their value is uncertain when points for differential diagnosis are under consideration. A word of praise is due to the excellent printing and production of a book which is conveniently light and easy to handle.

Traumatic Mental Disorders in Courts of Law

By WILLIAM A. BREND, M.D. Lond., of the Inner Temple, barrister-at-law; lecturer on forensic medicine, Charing Cross Hospital, London. London: William Heinemann (Medical Books). 1938. Pp. 104. 7*s.* 6*d.*

DOCTORS who frequently give evidence in courts of law are well aware of the absurdity of a procedure by which medical issues of diagnosis and prognosis are determined by a judge on the arguments of counsel based upon medical evidence. This is comparable with the determination of issues of law by a doctor on the arguments of two doctors after hearing two barristers as witnesses, and it is often painfully evident that both judge and counsel, in spite of long experience, are quite unable to grasp the nature of the problem which they do not hesitate to solve. Dr. William A. Brend, whose long experience as medical referee enables him to speak with authority, discusses in this book the difficulties which arise when civil courts are called upon to decide medical issues. His views on the relationship of trauma to the development of mental symptoms, which are necessarily somewhat condensed in this short book, appear to be those rather of a lawyer than of a practising psychologist. He seems unwilling to accept the view that the expectation of compensation plays a large part in the maintenance of traumatic neurosis. He rightly emphasises the importance of psychological stresses which antedate the accident, but it is not

very clear how he distinguishes a traumatic neurosis from a neurosis which follows trauma but is not caused by it. Any theory of the ætiology of traumatic neurosis must take account of the fact that in practice this disorder hardly ever occurs in patients who receive an injury in circumstances which do not entitle them to compensation from anyone. Dr. Brend is on firmer ground in dealing with the position of the medical witness in civil actions and the unsuitability of existing legal procedure for arriving at a correct medical decision. When he draws attention to the alleged bias of the expert witness he is not perhaps making adequate allowance for the fact that a medical referee, like a judge, hears only disputed cases. For one case that comes to trial there are probably twenty that never reach the court because there is no dispute between the doctors on the two sides, and even in disputed cases the point at issue is often one upon which medical opinion is legitimately divided, such as the relationship between trauma and organic disease.

These points, however, are unimportant compared with Dr. Brend's main thesis, which is that medical issues should be decided by a medical board. It is to be hoped that his carefully argued case will be considered by the Royal Commission now at work on the question of workmen's compensation.

Essentials of Human Embryology

(2nd ed.) By GIDEON S. DODDS, Ph.D., professor of histology and embryology, school of medicine, West Virginia University. London: Chapman and Hall. 1938. Pp. 316. 20*s*.

THIS is a simply written account of the main points in human development which bear on the work of medical students. It does not attempt to deal with details to any extent, but where these are introduced they are given accurately and clearly. Attention is paid to anomalies from the embryological standpoint, and these are summed up in an excellent last chapter. The book is well illustrated and can be recommended to those who want a summary, as distinct from an abstract, of embryonic development.

Clinique chirurgicale des pays chauds

By BOTREAU-ROUSSEL, director of the École d'Application du Service de Santé des Troupes Coloniales; and six others. Paris: Masson et Cie. 1938. Pp. 335. Frs.80.

THIS book is based upon the course of special surgical instruction given to officers of the Service de Santé des Troupes Coloniales before their service abroad. The matter is treated from an essentially practical point of view but the various sections have been written by men with particular experience and knowledge of their subjects whose aim is to maintain a proper spirit of criticism and to foster further research. The opening chapter concerns the interaction of malaria and surgical procedures and contains a useful section on malarial syndromes simulating surgical conditions. Then comes a chapter on the surgical aspects of dysentery and colitis, whose value lies in its conservatism, followed by an important section on the surgery of liver abscess. Naturally, the surgery of filariasis occupies an important position and its practical aspects are well illustrated. Non-filarial elephantiasis, schistosomiasis, tropical ulcers, suppurative conditions and the surgical complications of certain helminthic and bacterial infections receive notice, and there is a most interesting chapter on yaws. The book closes with a useful section on surgical tuberculosis in the African negro, founded on a series of original observations extending over more than twelve years. Since the book is based upon a course of special lectures general surgery is omitted, but a section on hydatid disease should have been included.

The illustrations are excellent and the book is well worth reading by those practising surgery in the tropics.

Medical Entomology

(2nd ed.) By W. A. RILEY, Ph.D., Sc.D., University of Minnesota; and OSKAR A. JOHANNSEN, Ph.D., Cornell University. London: McGraw-Hill Publishing Co. 1938. Pp. 483. 25*s*.

IN its new edition this book, which was first published six years ago, has been thoroughly revised and modified in points of detail, but its general form is little changed. It remains one of the most concise and well-balanced surveys of the subject that is available.

The Rheumatic Diseases

IN 1934 the Royal College of Physicians appointed a committee on chronic rheumatic diseases, consisting of 18 members under the chairmanship of Sir Humphry Rolleston, and this committee has since published four annual reports which have contained valuable contributions to our knowledge of their subject. Four years ago the Empire rheumatism campaign was inaugurated, and the R.C.P. committee became the scientific advisory committee of the newly constituted Empire Rheumatism Council. From now on the annual reports will be replaced by a new journal, *The Rheumatic Diseases*, published for the council by Messrs. H. K. Lewis of 136 Gower Street, W.C.1, and edited by Dr. C. W. Buckley, the former editor of the annual reports, with the collaboration of Dr. W. S. C. Copeman and Mr. A. G. Timbrell Fisher. The journal will appear about three times a year, and will consist of original papers and reviews dealing with all aspects of rheumatism, both chronic and acute, together with reports of the work of the Empire Rheumatism Council. The first number, published in January at 6*s*., contains a foreword by Sir William Willcox and papers on the rheumatic virus, the hæmolytic streptococci of the respiratory tract, and the relation between acute rheumatism and rheumatoid arthritis, and a case-record of Heberden's nodes in a girl of 15. It also contains Lord Horder's annual report as chairman of the Empire Rheumatism Council, in which he is able to record remarkable progress in spite of general preoccupation with threats of war. He announces that following the formation of a rheumatism council in Canada last year one is now to be formed in Australia. A research foundation is also being set up to investigate the causes of the high incidence of rheumatism in the training establishments of the Royal Navy.

Geburtshilfe und Frauenheilkunde

THIS is the first number of a new German monthly journal of obstetrics and gynæcology published by Georg Thieme of Leipzig. It appears under the ægis of a distinguished editorial board which includes Amreich, Kaufmann and Schröder, and counts among its foreign representatives Holland, Novak and de Snoo. Its aim is to bring recent research to the notice of those in practice. The contributions to this number cover a wide field, including a general survey of functional gynæcology by Schröder, papers on the treatment of amenorrhœas with ovarian hormones, the use of pregnancy serum in habitual abortion, and the rôle of drugs in obstetrics, reports of meetings, and book-reviews.

THE LANCET

LONDON: SATURDAY, MARCH 18, 1939

LIFE-STORY OF SIMPLE HERPES

IT has long been recognised that clinically herpes falls into two main groups, idiopathic and symptomatic. Before the causal agent was shown to be a filtrable virus present in the fluid of the vesicles it was thought that, in the symptomatic cases, the herpetic eruption was the work of the organism responsible for the primary condition—e.g., the pneumococcus in pneumonia. This hypothesis, however, failed to explain the idiopathic cases. The demonstration of the virus reversed the situation: the idiopathic group now became understandable on the basis of infection from without, even though this was not always easy to establish; but in the symptomatic group no such interpretation was possible, for in the vast majority a recent extrinsic infection could be ruled out. Two possible explanations were accordingly put forward: first that sufferers from symptomatic herpes are carriers of herpes virus, which is activated by conditions such as pneumonia, malaria, and protein shock; secondly that the primary disease gives rise to changes that result in the evolution of herpes virus de novo. The latter hypothesis, unpalatable to most virus workers, had its exponents, but the former more reasonable explanation was not long in finding support. In 1922 LEVADITI, HARVIER and NICOLAU [1] demonstrated herpes virus in the saliva of healthy persons, and two years later BUSACCA [2] isolated it from the conjunctival sac. This proved the existence of carriers of herpes virus and it was soon shown that, judging by samples, about two-thirds of the population have herpetic antibody in their serum. By the investigations of ANDREWES and CARMICHAEL [3] and of BRAIN [4] a close correlation between recurrent herpes and the possession of herpetic antibody was established.

On p. 629 of this issue Dr. BURNET and Miss LUSH take the epidemiology of herpes a stage further. Making use of the egg-membrane technique, which BURNET'S researches have done much to make available for virus study, these Australian workers have been estimating herpetic antibody in human sera. They were induced to undertake this investigation by WEYER'S [5] claim that herpetic antibody is absent from the serum in early poliomyelitis, and although they were unable to confirm this, they have made a number of interesting observations in other directions. Not only have they confirmed the findings of previous workers as to the widespread existence of herpetic antibody in human sera, but like ANDREWES and CARMICHAEL they have been struck by the fact that the people examined have either much of the antibody or none at all; there is no intermediate group. This finding, as they point out, can only be explained on the assumption that those who are infected with herpes virus become permanent carriers. A further important observation concerns the distribution of herpetic antibody among adults in the different strata of society: they report that the proportion proved much higher in the "hospital class" than among the well-to-do. It is the persons possessing antibody who carry the virus and are subject to recurrent attacks of herpes, and the uneven social distribution is consistent with the idea that the primary infection takes place in the early years of life; if it is avoided at that time increasing age brings increasing resistance—not, it seems, through the development of a specific immunity but through some change in the mucous membranes that renders them insusceptible to the implantation of herpes virus. There is indeed some positive evidence that the primary herpetic infection does occur early in life. DODD, JOHNSTON and BUDDINGH [6] have shown that aphthous stomatitis in infants and young children is caused by the herpes virus and they regard this condition as a primary herpetic infection. BURNET and LUSH isolated herpes virus from two young children with aphthous stomatitis at a time when neither child had any herpetic antibody in the serum, and three weeks later the serum of one child contained a considerable amount of antibody. To sum up the discoveries of the last ten years one may say that primary herpetic infection, commonly in the form of a stomatitis, occurs in early childhood, and the person thus infected becomes a permanent carrier. If a child escapes infection during the first decade the chance of herpes virus being implanted later becomes remote, the carrier state is not set up, and symptomatic herpes will never develop. In carriers the attack of herpes is attributable to an upset of the balance between host and virus—for example, by infection, worry, fatigue, or menstruation.

One important question remains unsettled: where does the virus reside in the carrier? There are two possibilities. Either it persists in the cells of the affected mucous membrane, or like the virus of zoster it takes up permanent quarters in the appropriate sensory ganglia. BURNET and LUSH favour the second hypothesis but have failed to obtain any corroborative evidence, for they were unable to isolate herpes virus from the gasserian ganglia of individuals who possessed herpetic antibody and were therefore carriers. Although this limited failure does not exclude the possibility that herpes virus is carried in nerve tissue, other considerations make it unlikely. In zoster multiplication of the virus in the posterior spinal root ganglion is almost always attended with intense pain, whereas there is no such pain before a herpetic eruption except in those rare cases where

1. Levaditi, C., Harvier, P., and Nicolau, S., *Ann. Inst. Pasteur*, 1922, **36**, 105.
2. Busacca, A., *Arch. Augenheilk.* 1924–25, **98**, 253.
3. Andrewes, C. H., and Carmichael, E. A., *Lancet*, 1930, **1**, 857.
4. Brain, R. T., *Brit. J. exp. Path.* 1932, **13**, 166.
5. Weyer, E. R., *Proc. Soc. exp. Biol., N.Y.* 1932, **30**, 309.
6. Dodd, K., Johnston, L. M., and Buddingh, G. J., *J. Pediat.* 1938, **12**, 95.

herpes simplex simulates herpes zoster. Furthermore, the virus of herpes simplex has been recovered from the mouth between herpetic attacks, and if its residence during quiescent periods is the gasserian ganglion what was it doing in the mouth? One would expect it to lie quiescent in the ganglia until reawakened into activity by some new upsetting factor. In view of these two objections it is difficult to share BURNET and LUSH'S preference for the second hypothesis; the facts seem to be more readily explained by assuming that the virus persists in the cells of the mucous membrane.

WAGES AND SICK-PAY

THE Court of Appeal has decided in MARRISON *v.* BELL that an employee who has been absent from work through sickness has a right (unless there is a special agreement to the contrary) to draw both his wages and also his insurance benefit. Marrison was a salesman employed at £3 10*s.* a week. He became ill and went to hospital. After he had been absent for 16 weeks his employer gave him a week's notice. Marrison then sued his employer for £56—namely, 16 weeks' wages. Bell, the employer, denied liability. He had been obliged to engage and pay another man in Marrison's place; moreover Marrison had been receiving health insurance benefit at the rate of 18*s.* a week; to pay him his wages would mean that he received £4 8*s.* weekly. Bell contended that the contract had been broken because it was subject to the implied condition that it should be discharged if Marrison was unable to perform his service through incapacity. Alternatively he contended that the continued absence of an employee without his master's consent discharged the master from liability under the contract. The county-court judge found in favour of the master. He did not regard the contract of service as terminated by the workman's absence, but he thought that the right to wages ceased during that absence unless there was some express agreement to the contrary. It was inequitable that Marrison should draw both wages and insurance benefit.

In the Court of Appeal a different view was taken. Lord Justice SCOTT was clear that illness was not a breach of a contract of service. There was a long series of cases to the effect that, irrespective of the length of notice under the contract, wages continued during sickness until the contract was terminated by notice. In Elliott *v.* Liggens (1902) the court had to consider the effect of the receipt of part of the workman's wages by way of compensation under the Workmen's Compensation Act. It was then decided that the act had introduced a modification; while the workman was receiving some part of his wages as statutory compensation, his common-law right to his full original wages must be regarded as suspended. But health insurance benefits were not of the same nature as workmen's compensation payments. The insurance benefit was something additional, consisting of medical assistance or similar advantages; it had nothing to do with wages; when Parliament established national health insurance, it never intended to interfere with the worker's right to his wages. Marrison was entitled both to the insurance benefits and, until his contract of service was terminated by notice, to his wages also.

The decision has caused considerable misgiving. It will hardly improve the relationship between master and servant. The master will feel aggrieved if he has to pay two men's wages for one man's work. Lord Justice SCOTT observed that the decision need not embarrass employers because most employees are engaged on a weekly, or at any rate on a monthly, basis. The employer can therefore terminate the contract of service at short notice. But the decent employer does not want to feel obliged to dismiss a servant who is ill. In domestic employment there has been a general idea that sick wages plus insurance pay should equal ordinary pay. This has seemed equitable, but the employers who have thought this solution was reasonably adequate now find that they have paid the sick servant less than his rights. In factory and outdoor employment it has not been uncommon to act as the defendant did in Marrison *v.* Bell—namely, to stop paying wages during the workman's absence (in view of the provision of sick-pay) and to take him back as soon as he is well again, provided that he recovers in a reasonable time. The Court of Appeal decides that the master must either give notice or pay wages. The medical aspect is uncomfortable. The employee who knows that he will be dismissed if he is absent through sickness will be tempted to disobey medical advice; he will remain at work when he ought to go sick, and he will go back to work before he is fit to do so. Anxiety over the prospect of dismissal will be an added cause of depression. The legal situation may be met by an express agreement that the amount of insurance benefit payment shall be deducted from wages during a period of absence through illness. Otherwise fresh legislation may be needed to correct the unforeseen consequences of the decision.

ANTI-TUBERCULOSIS WORK IN WALES

TWENTY-SEVEN years ago the Welsh national association, created in memory of King Edward VII, entered into voluntary agreements with local authorities and insurance committees in Wales to provide treatment for tuberculosis on their behalf. All went well for two decades, but in course of time a feeling gained ground among certain of these authorities that the expenditure on tuberculosis was out of proportion to the amount of local funds available for public-health work. The dissatisfaction came to a head when the association's proposals for the third fixed-grant period suggested still higher expenditure to allow the association to take over activities for some of which the local authority was responsible. The association proposed to undertake home-visiting and aftercare, to control the tuberculosis registers, and to oversee the disinfection of the home after removal of an infectious case. It proposed to extend its scope just because in many

areas the local authorities had failed to carry out their statutory duties, and it was believed that this default was one of the reasons why the death-rate from tubercle in Wales was not decreasing as it was in England and Scotland. The clash of opinion led to the appointment by the Ministry of Health two years ago of a committee of inquiry whose report is summarised on a later page. At the commencement of the inquiry it appeared as if the efficiency of the association's work was being challenged, but the aspect of affairs soon changed. Evidence taken in public made it clear that the association was effectively carrying out its proper functions in the diagnosis and treatment of tuberculosis, and that there was a general desire for its continuance on a national basis. It was however also clear that the lamentable failure of local authorities to do their own preventive work afforded justification for the suggested incursions into other branches of work. Graphic accounts are given of appalling housing conditions, to which attention had been drawn in vain by local medical officers of health; of school buildings long condemned as dangerous to health but still in use; of antiquated and objectionable methods of disposal of sewage; of a water-supply liable to pollution; of failure to provide clean milk or midday meals for children. It is fair to add that the committee found a great disparity among local authorities in the standard of performance of public-health services and that some are praised for foresight, enterprise and public spirit. The later part of the inquiry became in fact an investigation into the efficiency of sanitary administration in Wales, from which it emerged clearly enough that many of the Welsh local authorities are too small and too poor to carry out public-health work efficiently, whatever may be the case with the large urban areas in the south. There should be some combination of small areas to provide a unit of population capable of finding the effective machinery, with the corollary of whole-time M.O.H.'s and sanitary inspectors covering the whole country. The inquiry, which has throughout been fully reported in the Welsh press, has undoubtedly led to a quickening of the national health conscience, and will stimulate backward authorities to play their part in any anti-tuberculosis scheme.

TWENTY-FIVE YEARS OF PSYCHO-ANALYSIS

SINCE 1914 members of the British Psycho-Analytical Society have been probing the springs of desire and the wells of loneliness, but not until last week has the society itself made any public appearance. At the silver jubilee dinner Dr. ERNEST JONES, founder of the society, had on either side of him a minister of the Crown; at the high table were representatives of all branches of the medical profession, while each of the separate tables had its own international gathering. Dr. SIGMUND FREUD, the society's most distinguished member, was unable to be present, but his daughter, Miss ANNA FREUD, conveyed a message from him and was entrusted with a message in return. Greetings were personally conveyed from kindred psycho-analytical societies in France and Holland, two of the three European countries in which the practice of psycho-analysis is still admissible: the parent society in Vienna exists no longer, and Dr. JONES thought everyone would agree that the British society is now the chief bulwark of psycho-analysis in Europe. Earl DE LA WARR, proposing the principal toast, recognised the change in public attitude to many questions—legal, educational, sex relationships—that had been brought about by the indirect influence of psycho-analysis; and Mr. WALTER ELLIOT recalled a pre-war conversation with Dr. EDWARD GLOVER when they spoke together of medicine turning through psychology to sociological study, although neither of them could have foreseen what it would lead to. It was Dr. GLOVER, in proposing The Guests, who unkindly remarked that psycho-analysts with very slight exception are bad writers; but that matters the less because, said he, they are themselves so much at loggerheads on education as to make it unlikely for them to issue any major pontifications on the subject for some time. And Dr. JONES, although himself at one time no mean fighter, excused himself from further endeavour to persuade medical colleagues to take a more objective view of the problems, with which psycho-analysis is concerned, by admitting frankly that the internal difficulties nature has imposed in the way of reaching the unconscious mind, and still more in the way of maintaining a free communication with it, have proved far greater than was at first supposed. It will, he said, take perhaps a couple of generations yet of intensive work before we shall be in a position to present to the outer world a well-codified body of knowledge. For himself the anniversary encouraged rather a mood of retrospection, a sort of stock-taking. He came into this field of work by the following route. In the usual preoccupation of youth with the general problems of life and its meaning, he had passed first from a study of religion to that of philosophy, but evermore came out of the same door wherein he went. A more intimate contact with reality then took him into the field of sociology, in which he fared no better until he tried to bring our social institutions—laws, government, marriage—into relation with a biological knowledge of human nature. Some intuition told him that access to the fundamental layers of the mind could most advantageously be attained by a detailed study of the clinical phenomena investigated by psychopathology, and he looked around eagerly for the company of the few minds who took them seriously. Then came FREUD; and, said Dr. JONES, the rest of the story you know.

MEDICAL SCHOLARSHIPS AT LONDON UNIVERSITY.—The London Inter-Collegiate Scholarships Board announces that an examination for twelve medical scholarships and exhibitions of a total value of £1640 will begin on May 8. They are tenable at University College Hospital, King's College Hospital, the Royal Free Hospital, and St. George's Hospital. Full particulars and entry forms may be had from the secretary of the board, University of London, Senate House, W.C.1.

ANNOTATIONS

C.C.H. OR C.E.P.?

WE publish on p. 655 an important criticism of the arrangements now being made for handling casualties sustained in air attack on big cities such as London. According to the plans outlined in the Ministry of Health's memorandum [1] all the large general hospitals are to be quickly transformed into casualty-clearing hospitals (with not more than 200 beds), while most of the smaller and special hospitals will become first-aid posts, receiving only the walking wounded. It will be the duty of first-aid workers at the site of destruction to divide the casualties into those that go home, those that go to first-aid posts, and those that go on stretchers to the casualty-clearing hospitals, which will cater chiefly for the more serious cases. Dr. Crome and his colleagues believe that this scheme will break down after the first big air-raid, because any building known to be a hospital will at once be confronted with a stream of wounded of all categories: some of those who walk will have wounds of chest or abdomen, and some of those on stretchers will have trivial injuries of the leg. Even if the movements of the victims are controlled, accurate classification is beyond the power of red-cross orderlies; yet the experience of the world war and the Spanish war shows that an accurate classification at the earliest possible moment, and a correspondingly accurate and rapid evacuation, are the most urgent of all needs. The Ministry of Health is clearly anxious to promote this rapid evacuation, but the authors of the article think that the "casualty-clearing hospitals" it is planning put too much emphasis on the "hospital" and not enough on the "casualty-clearing"; and this leads them to propose an alternative type of centre, which they term a "classification evacuation point," and an organisation based on it. In choosing the existing general hospitals as the casualty-clearing centres the authorities have no doubt been attracted by their waiting-halls, operating-theatres, equipment, and beds; but in the opinion of Crome, Fisher and Shirlaw these advantages are outweighed by the fact that most of the buildings are old and highly collapsible, while many are not conveniently placed for rapid evacuation of casualties by road and rail. If it cannot be underground, a casualty-clearing centre must, they say, be in a steel-framed building, and there are factories, warehouses, garages, hotels, and blocks of offices and flats much fitter for the purpose than our time-honoured centres of healing. The fact that Rahere or Guy chose a particular site for his hospital many years ago does not mean that this site is necessarily the most appropriate for an evacuation point; the steel-framed flats round Baker Street station, for example, with arterial roads and main-line and underground railways close at hand, might well be preferable if immediate evacuation, rather than immediate surgery, is the primary aim.

To visualise the possibilities of air warfare and provide wisely against all of them is a superhuman task, and the temptation is all the stronger not to deviate from decisions once they are reached. We feel sure however that the Minister of Health and his advisers will give full consideration to the argument now advanced. Much hangs on these issues; for if the inhabitants of London find themselves in the front line their morale, like that of other troops, will largely depend on the care their wounded receive.

1. Emergency Hospital Organisation. Emergency Medical Services Memo. No. 2. See *Lancet*, March 4, 1939, p. 523.

WHOOPING-COUGH: DIAGNOSIS AND PROPHYLAXIS

NEW work on various aspects of whooping-cough control is discussed by Sauer.[1] He reviews the main evidence upon which the coccobacillus of Bordet and Gengou (*Hæmophilus pertussis*) has been accepted "quite universally" as the sole causal agent of whooping-cough. The evidence includes animal and human transmission experiments carried out under conditions which excluded the possibility of a concomitant filtrable virus. On the question of diagnosis Sauer observes that a protracted paroxysmal contagious cough, lacking the terminal whoop, may be due to catarrhal tracheobronchitis and that clinical whooping-cough may also be simulated by the paroxysmal cough of distemper (snuffle infection) which young children sometimes contract from pet animals. In the absence of a history of contact or an unmistakable paroxysm, the diagnosis may be substantiated by an early positive cough-plate, typical lymphocytosis or, later in the attack, a positive complement-fixation test. Clinically typical whooping-cough is sometimes caused by atypical strains of the *H. pertussis*. Eldering and Kendrick isolated such an organism (*B. parapertussis*) and Bradford and Slavin grew some 5 per cent. of atypical strains from 160 consecutive "positive" cough-plates. These atypical strains darkened the medium and showed early pleomorphism, and were all strongly antigenic when injected into rabbits. It is not yet known whether potent whooping-cough vaccine protects against these atypical strains, but Sauer does not favour their inclusion in stock vaccines. He insists that the ultimate test of vaccine-conferred immunity is a comparison of the incidence of whooping-cough after intimate exposure to infection in similar groups of unvaccinated and vaccinated susceptible persons in the same age-range—preferably between eight months and three years. Few of the published reports of success in vaccine prophylaxis would satisfy these criteria. For the past year "authorised" pertussis vaccine, prepared according to Sauer's specification, has been supplied in double strength (20,000 million organisms in 1 c.cm.). Three injections of this vaccine are given "just under the skin" at weekly (or longer) intervals, the first and second over the left and right deltoids and the third over the left triceps. Children under two receive a total dose of 5 c.cm. (1, 2 and 2 c.cm.); those over two, 6 c.cm. (1, 2 and 3 c.cm.). Pyrexia and transient local reactions may occur and induration, or nodules, may persist for a week or more.

After the height of an attack has been reached, or after adequate vaccine prophylaxis, complement fixation is nearly always demonstrable provided freshly isolated cultures are used. Sauer notes that since 1934 L. Daughtry-Denmark has employed complement fixation as a routine test a month or more after the last dose of vaccine. If fixation is not complete (four plus) she gives an additional injection. Good results are claimed by several workers from the use of convalescent serum, particularly the reactivated, so-called "hyperimmune," serum obtained from parents after injection with three doses of vaccine at 3-day intervals. As with measles serum, it is now possible to dry and preserve pooled "hyperimmune" serum, which is redissolved in sterile distilled water immediately before use.

1. Sauer, L. W., *J. Amer. med. Ass.* Jan. 28, 1939, p. 305.

To be of any value, serum of any type must be injected in the incubation period or early catarrhal stage. During the paroxysmal stage attempts to confer either active or passive immunity are futile.

A SIMPLE EXPOSITION OF POPULATION PROBLEMS

THOUGH the population question has now become "news," and articles on the declining birth-rate are common, it is doubtful whether the casual reader understands why the decline is viewed so seriously. He knows that the birth-rate is still higher than the death-rate, and that year by year the population continues to increase. He notes the continued prevalence of unemployment and recalls the warnings that used to emanate from authoritative sources on the danger of over-population. If experts were wrong when they talked of over-population why, he may well wonder, should they be right when they say that the evils of under-population are now to be feared? This complacent attitude will not be changed by dogmatic statements or alarmist prophecies. What is needed is an exposition of the demographic position, and for this it is necessary to know something of the modern methods of measuring population growth, especially of the simple methods introduced by R. R. Kuczynski. These repay study not only for the new light they throw on population problems but for the intellectual satisfaction derived from observing the emergence of order from confusion. The methods are clearly explained in a booklet by Mr. Glass and Dr. Blacker.[1] The authors regard the problem before them as falling into two stages: (1) how has fertility declined, and (2) why has fertility declined? The second question cannot be attacked effectively until an attempt has been made to answer the first, with which the authors are mainly concerned. They begin by showing how misleading the crude birth-rate may be when used, as it was used by Mr. A. P. Herbert in the second-reading debate on the Population (Statistics) Bill, to measure fertility, and go on to explain how the gross and net reproduction-rates are computed and how simply and satisfactorily the latter measures the combined effects of fertility and mortality. This chapter is a commendable example of clear and effective argument. An account given of the development of the British system of census-taking and vital registration includes a description of the important reforms introduced by the long overdue Population (Statistics) Act, 1938. The second-reading debate on this measure, which took place on Nov. 29, 1937, is curiously reminiscent of the abortive attempt in 1753 to obtain legislative authority to take a census. Mr. Thornton, M.P. for York, attacked the supporters of the Census Bill introduced in that year as "presumptuous and abandoned": "To what end should our number be known except that we are to be pressed into the fleet and the army, or transplanted like felons to the plantations abroad? . . . I hold this project to be totally subversive of the last remains of English liberty. . . . If any officer should demand of me an account of the number and circumstances of my family, I would refuse it; and if he persisted in the affront, I would order my servants to give him the discipline of the horse-pond."

The demographic position in this country, the Dominions, and the United States, Sweden, Germany, France, Italy, the Ukraine, and Japan are examined and compared with the aid of illuminating diagrams and two short chapters are devoted to discussing various aspects of a question on which census and registration statistics can at best throw but little light—the reason for the decline in fertility. The authors think that the explanations offered for individual family limitation are often not the true ones. A case is mentioned in which the mother of a family of three children first attributed the limitation partly to the danger of war, but further inquiry showed that a far more potent factor was the threat of the eldest child to leave home if her mother had another baby. There is much still to be learnt about the motives of family limitation, and medical practitioners are peculiarly well placed to add to our stock of knowledge on this subject, to which this booklet is an excellent introduction.

1. Population and Fertility. By D. V. Glass, B.Sc., and C. P. Blacker, M.D., F.R.C.P. London: The Population Investigation Committee. 1939. Pp. 101. 3s.

RADIOGRAPHIC LOCALISATION

METHODS of localising foreign bodies in human tissues become urgently important in time of war and the instructions given by Brailsford [1] might well be studied by all who expect to undertake the care of casualties under military or A.R.P. schemes. The apparatus necessary is simple—even a portable X-ray unit is adequate—and although accuracy requires some expenditure of time in the radiological department, both surgeon and patient benefit by the time saved in operating. First an ordinary antero-posterior radiogram is taken with a pointer showing the position of the wound. Occasionally this is all that is needed, but as a rule further localisation will be wanted. To this end metal markers of bent wire of a characteristic shape are then fastened to the skin and further anteroposterior and lateral films are taken, some at least with the patient in the position he will be for operation. The series of markers makes it possible to estimate the depth at which the foreign body lies. Another useful method advocated by Brailsford is a modification of that proposed by Mackenzie Davidson. Two exposures are taken on one film, the tube being at a known height and being shifted a measured distance between each exposure. In this way the depth of the foreign body can be determined by simple geometrical calculation. Brailsford is strongly opposed to any attempt to extract the foreign body during fluoroscopic screening, an opinion with which most radiologists will agree, but he makes the ingenious suggestion that a skeleton in which the radiologist has fixed a piece of Plasticine in the exact position of the foreign body may be used as a guide.

Chaussé [2] describes an elaborate method of localising foreign bodies by means of his "light compasses." A special apparatus is set up in the operating-room and is so arranged that once the foreign body is localised two small beams of light can be thrown on to the patient in such a way that they lead the surgeon to the point where the foreign body lies. The value of such a method when exploration must be undertaken in the brain or in such dangerous situations as the heart wall must be very real.

Closely associated with these methods of localisation is the use of foreign bodies purposely inserted into the tissues for beam-direction in radiotherapy. The influence of volume on tolerance and even on ultimate result is now thought so important that small applicators 5·0–6·5 cm. in diameter are used wherever possible. Accuracy of aim which will ensure that the central beam always passes through

1. Brailsford, J. F., *Brit. J. Radiol.* February, 1939, p. 65.
2. Chaussé, C., *Ibid*, p. 87.

the centre of the tumour needs localisation much like that described by Brailsford. In the method described by Dobbie [3] a tiny metallic foreign body is placed in the tumour and its relationship to wire skin-markers is established by radiograms taken with a wooden applicator which duplicates that which will be used for therapy. Specially constructed wax blocks, modelled to the patient, make it certain that when the optimum position for the applicator has been determined it will be exactly repeated each time the patient is treated. The interesting similarity of these methods of localisating shows how much the two branches of radiology can learn from one another.

OSTEOGENIC ACTION OF BONE GRAFTS

IT is well recognised that the transplantation of fully differentiated hard bone into soft mesenchymal tissues leads to the formation of new bone in these tissues; but the origin of this new bone is disputed. In trying to discover the factor that stimulates osteogenesis, Levander,[4] of Köping in Sweden, has performed experiments of two different kinds—namely, the grafting of adult radius and ulna into subcutaneous and muscular tissues and the injection of bone extracts into muscle. The experiments were done on rabbits and the grafts consisted of fragments 1·0–1·5 cm. long. The periosteum was scraped away with a sharp knife, and in about half the animals a superficial layer of bone also was removed with a sharp raspatory. Thirty rabbits were treated in this way and the histological appearances recorded at intervals of 2–30 days after the transplantation of bone fragments into the subcutaneous or muscular tissues. At the end of two days mesenchymal proliferation was apparent, associated with the formation of numerous new blood-vessels. By the sixth day young osteoid seams appeared in the mesenchyme, arranged parallel to the graft or round one or other end. Cartilaginous islets were occasionally seen. Meanwhile the transplanted bone became necrotic, the bone cells died off soon, and the transplant was dead at the end of a fortnight. Cell division was not seen at any stage. Levander is convinced that the new bone originates in a mesenchymal reaction and owes nothing to transplantation of osteoblasts. He found the haversian canals empty while new bone was being formed round them.

The second group of experiments was designed to show what part of the transplanted bone provided the osteogenic stimulus. He had decided that it was not the bone cells; nor could it be the lime salts, for boiled bone, still containing unaltered lime, did not stimulate osteogenesis. He thought that the stimulating agent might be transferred from the graft to the surrounding tissues in the form of some substance soluble in the lymph, and he attempted to extract this hypothetical substance from bone and to inject it into muscle. After aqueous extracts had proved negative in ten experiments alcoholic extracts were tried; there was reason to think that they might be more effective, for injections of a 40 per cent. solution of alcohol into soft tissues had been found to produce an abundance of young mesenchymal tissue, which would provide the medium of young undifferentiated cells suitable for osteoid transformation. The muscle used for injection was the rectus femoris, because its belly was as far as possible removed from bony contact and origin, and 60 tests were made with alcoholic extracts of mixed bone and callus. The bones of a forearm, previously fractured and in process of union, were cut up, macerated, made into a mash, and put into a tube containing 10–15 c.cm. of absolute alcohol. The extracts were kept at 40° C. and injected next day, after dilution with saline. About 3–5 c.cm. was injected into the rectus femoris, and the period of observation extended over two weeks to two months. In 14 of the 60 tests more or less extensive formation of bone or cartilage was observed. In 10 other cases, injection was made with alcoholic extracts of normal bone tissue without callus. The technique was the same, but the period of observation was shortened and did not exceed twelve days. In 2 cases cartilage was formed.

Thus in 16 of 70 animals receiving the alcoholic injections of bone, or of bone and callus, either cartilage or bone was formed at the site of injection, while negative results were obtained in 80 control experiments in which alcoholic solutions alone, or alcoholic extracts of connective tissue or muscle, were injected. Levander accordingly feels justified in postulating the presence in the transplanted bone of some specific substance that activates the non-specific mesenchymal tissue and causes it to form bone.

COUNTY COUNCILS: 1889 TO 1939

THE jubilee of the establishment of county councils in England and Wales is being celebrated this month. A well-produced account of their present responsibilities and functions, set out against a historical background, has been issued by the County Council's Association.[1] The Prime Minister in an introductory note describes it as an inspiring record of progress. The first and major part of the book, which has attractive illustrations of highways, bridges old and new, schools, technical institutes and hospitals, is a general survey; the second part describes the individual activities of one of the 32 councils which are participating in its production. The book is being issued in special editions for local distribution, with the appropriate second part; it is not for sale.

The general survey shows the chaos that arose from the overlapping powers of the units of administration—varying from parish vestries to courts of quarter sessions—which shared the responsibility for local government 50 years ago. The bill, introduced in 1888, which provided for the establishment of councils to be entrusted with the management of the administrative and financial business of each county was based on one drafted five years previously by Sir Charles Dilke. The contentious clauses in this original draft—such as those providing for control over the poor-law, education, and public health—were dropped, and even then disagreement on the question of control of the constabulary nearly wrecked the bill. But a compromise was found, and the Local Government (County Councils) Act was passed in August, 1888. Not till 40 years later were the county councils given responsibility for the full range of public services which we now regard as obviously within their proper scope. Nowadays it seems only logical that they should deal with roads and bridges, education, public health, housing, mental treatment, public assistance, agriculture, town and country planning, some aspects of public protection, and registration and licensing, and that they should have supervisory powers—rarely used—over certain smaller authorities in their areas. Each

3. Dobbie, J. L., *Ibid*, p. 121.
4. Levander, G., *Surg. Gynec. Obstet.* 1938, 67, 705.

1. The Jubilee of County Councils 1889 to 1939. London: Evans Bros. 1939.

of these functions provides material for a chapter in this jubilee book which also includes informative sections on finance and staff. The magnitude of county budgets is shown by the estimate of the expenditure of the county councils of England and Wales, excluding London, at over 130 million pounds for the year 1938–39. The present cordial relationship between Whitehall and the county councils is exemplified by the observation that, where 30 or 40 years ago the Government issued an ultimatum, now they are likely to suggest a round-table conference. There are occasional clashes but on the whole there is an increasing friendliness animating dealings between Government departments and county councils. The changes likely to be made in the methods of county government in the future are discussed with a dispassionate appreciation of the defects of the present system—e.g., the impossibility of bringing pressure to bear on neighbouring authorities unwilling to coöperate in running certain services. The Middlesex county council has prepared a separate account of its activities, to be issued by the same publisher.

The L.C.C. is to hold a special ceremonial meeting on March 21, after which Queen Mary will open a jubilee exhibition at the County Hall which is designed to present a complete and vivid picture of the council's work today, including its hospital, medical, nursing and midwifery, and ambulance services. Several types of mechanical respirators will be demonstrated and other modern hospital equipment.

MASS RADIOGRAPHY

THERE is general agreement that radiography is the best means of detecting early tuberculous lesions in the lungs, and where it has been used in the examination of large groups of the normal population it has made possible a striking reduction of the disease. The most successful experiment so far recorded was carried out some years ago on the Berlin police force, which had a high incidence of pulmonary tuberculosis. All members of, and candidates for, this force were radiographed, and those found to have X-ray evidence of pulmonary disease were retired and treated; since when there have been hardly any cases of tuberculosis in the force. A similar and more elaborate experiment is now being carried on in England by the Royal College of Physicians under the terms of the Prophit bequest. This investigation is being conducted over a period of 5–10 years on suitable sections of the population, and although the results are not yet available for publication its value has been abundantly proved.

The only objections to "mass" chest radiography are time and expense, and the shortage of doctors and film material in Germany has led to the development of a form of apparatus which overcomes both these obstacles. The principle employed is simple. An ordinary camera of the roll-film type is mounted in focus at the narrow end of a lead-lined funnel approximately four feet long. At the broad end of the funnel a fast modern fluoroscopic screen is inserted. This combination is mounted on a telescopic stand and can be easily moved up and down. An ordinary X-ray tube mounted on a pillar is placed at a fixed distance facing the screen end of the funnel. The patient walks in and places his chest against the screen, the tube is centred on the middle of the screen, and an exposure is made. The camera at the other end of the funnel takes an ordinary reduced photograph of the screen image. A single movement of the hand places a new film in position, and it takes less than a minute to centre the tube and funnel for the next patient. At a reasonable estimate a hundred patients an hour can be thus examined. Depending on the type and size of camera employed, the film roll may contain anything from six to thirty-two exposures. The roll of films is developed in the ordinary way and later viewed either with a magnifying glass or with a small projector. Using a modern wide-aperture lens and fast films the detail is surprisingly good and compares favourably with that of ordinary direct radiograms. In a modern hospital X-ray department the cost of each chest examination works out at about five shillings, whereas with this new indirect method the cost should not be more than a penny per case.

It can hardly be doubted that indirect photography of the screen image will come into universal use for examination of large sections of the population such as school-children, and it should also prove invaluable in all ordinary hospital work for eliminating normals and reserving detailed, direct X-ray examination for those showing evidence of disease. This week it is announced in the *News Chronicle* that the entire population of Mecklenburg are to have their chests radiographed by doctors of the S.S. (Black Guards). More than 900,000 photographs will be taken and they will all be examined at the University of Frankfurt.

INDICATIONS FOR CARDIO-OMENTOPEXY

MORE difficult sometimes than the devising or performance of a new surgical technique is the correct choice of patients for it. An article at the front of our present issue reveals something of the ingenuity and patient work underlying recent attempts to bring about revascularisation of the ischæmic heart by surgical means, and it may be useful to present at the same time an example of conservative opinion on the practical application of such treatment. In addressing a Paris audience on this subject Pruche [1] spoke as a cardiologist, following Le Gac, who had described the technique of cardio-omentopexy practised at the Lambeth Cardiovascular Clinic. Distinguishing three main types of cardiac ischæmia, Pruche said that in the first, disorder of rhythm due to localised failure of blood-supply, a graft could be effective only in the unlikely event of the new vessels reaching the site of the lesion. Here we think he misunderstands O'Shaughnessy's conception of cardio-omentopexy, which is that the graft performs its revascularising function, not locally at the site of its application—except perhaps in cardiac infarction or aneurysm, where omentum may have a reinforcing action—but generally through new vessels linking up with the coronary tree. Thus lesions due to localised ischæmia may indicate cardio-omentopexy because they are evidence of general coronary disease in which the operation would be beneficial. Secondly Pruche considered cardiac ischæmia due to coronary spasm and thrombosis. The promising results obtained in angina pectoris might, he suggested, be explained by the fact that the omental vessels lie outside the coronary vasoconstrictor reflex arc, but he went on to emphasise the need for caution in seeking an explanation for the mechanism of relief from angina. In classical cardiac infarction the operation could give no immediate help, because time must pass before new vessels are formed. Infarction however often took place silently without pain, being found at autopsy in old people dying of a progressive myocardial insufficiency. Such hearts often showed

1. Pruche, A., *Bull. Soc. Méd. Paris*, 1938, **142**, 718.

some degree of natural revascularisation by intercoronary anastomoses. The third type, which included cases of myocardial sclerosis with slowly progressive cardiac insufficiency, with or without anginal pain, and without excessive hypertension, should in Pruche's opinion be the most general indication for cardio-omentopexy, although he realised that the patient, in the absence of pain, might object to operation. Diagnosis of the condition in its early stages depends, he said, on the electrocardiographic changes, which included low voltage, widening or notching of the Q R S deflection, inversion of the T wave, deviation of the S–T interval, increased voltage of the P wave, and prolongation of the P–R interval. He made it clear that he regarded electrocardiographic changes as the chief evidence that cardio-omentopexy would be useful, and he would hesitate to advise operation in cases of angina where the electrocardiogram was normal. He concluded with the remark that although this branch of cardiac surgery is only in its infancy it merits the lively attention of cardiologists.

THE M.O.H.'S MOVE HOUSE

NEXT week the Society of Medical Officers of Health moves its headquarters from No. 1, Thornhaugh (late Upper Montague) Street, to Tavistock House South. The society has been in its present house for the last 34 years after a long period of migratory existence during which it was a near neighbour of our own at No. 1, Adam Street and later at No. 9, Adelphi Terrace. For a period when John Simon, F.R.S., was president of the society, meetings had been held in Whitehall at the offices of the General Board of Health. At Tavistock House the society will become the near neighbour of the Medical Defence Union which is also to have its new home in the south extension of Tavistock House when that is completed next year. The house-warming is to await this final readjustment, and in the meantime we congratulate the society on having more room in which to move around and develop its work.

CONTROVERSIAL GROUND IN PSYCHIATRY

THERE are many discordant voices in psychological medicine, and the public, medical and lay, is sometimes tempted to believe that it has no means of finding out where orthodoxy and progressive common sense is to be found, since men of apparently equal experience and standing confidently express opposite views as though they were ultimate truths. Reliable guides however are not entirely lacking or hard to recognise. There are in this island two chairs of clinical psychiatry, and the occupants of these chairs speak with peculiar authority. One of them, Prof. Henderson, has examined in two recent addresses some of the most controversial ground in psychiatry. In his Maudsley lecture[1] he dealt faithfully with those who would arbitrarily split the field by separating psychoses from neuroses as though they were different in kind and treatment, and he expressed his agreement with the views on these matters set out in a leading article in THE LANCET some time ago.[2] In the Salmon memorial lectures,[3] delivered before the New York Academy of Medicine, he considers one of the major socio-medical problems—viz., the understanding and treatment of psychopathic personality. Avoiding alike rigid classification and subtle guesswork, he points out the grounds we have for modified optimism. "We have come to recognise that the rosy picture depicted by many psychotherapeutists in relation to the treatment of such (psychoneurotic) states needs considerable modification. This, of course, does not imply a nihilistic outlook but merely enforces the view that much of the psychoneurotic material with which we deal requires far more careful discrimination than has as yet been accorded to it, and, once that has been accomplished, methods of treatment may come to be devised which will more adequately deal with such deeply involved mental states." There are, as Prof. Henderson points out with illustrative case-records, among our psychoneurotic patients many who show malignant reactions that no psychotherapy can put right. But there is much that can be achieved by a well-organised psychobiological therapy, aiming at social rehabilitation: the doctor who carries it out "must not be a mere psychotherapist, but a physician in command of general medical training," with, besides, an adequate knowledge of the social side of his work. Dr. Henderson further points to the danger nowadays of "psychotherapeutically minded pastors, clinical psychologists, lay analysts and enthusiastic social workers" contributing by their one-sidedness to a schism between bodily and mental medicine which it has been the constant effort of psychiatrists and indeed of all sensible doctors to overcome. He deprecates that uncritical, facile acceptance of fashionable and spectacular remedies, whether psychological or physical, which is so harmful because it creates false leadership. The trend of his argument is wholly towards the cultivation in the psychiatrist of a sense of responsibility not only towards the individual but also towards society. His exposition, which raises and illumines other important issues, deserves the attention of all those besides the psychiatrists who come into contact with the anti-social psychopath.

1. *J. ment. Sci.* January, 1939, p. 1.
2. *Lancet*, 1935, 2, 1185.
3. Psychopathic States. By D. K. Henderson, M.D. London: Chapman and Hall. 1939. Pp. 178. 8s. 6d.

Dr. H. GUY DAIN has been returned unopposed as a direct representative of the medical profession in England and Wales on the General Medical Council for a further period of five years from April 27. The other direct representatives for England and Wales are Dr. G. W. Bone, Sir Henry Brackenbury, Mr. Bishop Harman and Sir Kaye Le Fleming.

Dr. WILHELM WEYGANDT, who died on Jan. 22, was for many years professor of psychiatry at Hamburg and had become one of the prominent figures in German medicine. He was active in introducing the malarial treatment of general paralysis, discovered in Vienna by Wagner-Jauregg, into Germany, and he made important contributions in the fields of cretinism, æsthetics and forensic psychiatry. He was insistent that a false humanitarianism should not be allowed to interfere with eradication of mental defect. His chief work, however, was the building up of the mental hospital of which he was director for 25 years into a centre of active research.

The name of Mr. Gwynne Williams appeared last week in a list of consultant advisers to the Ministry of Health on the organisation of hospitals in war-time. Mr. Gwynne Williams, who was nominated by the Royal College of Surgeons of England, is we understand unable to accept the appointment.

SPECIAL ARTICLES

CASUALTY ORGANISATION IN AIR-RAIDS

BY L. CROME, L.R.C.P.E.
FORMERLY CHIEF MEDICAL OFFICER, XV SPANISH ARMY CORPS

R. E. W. FISHER, M.B. Belf.
FLIGHT-LIEUTENANT, R.A.F.O.; ASSISTANT MEDICAL OFFICER FOR A.R.P., METROPOLITAN BOROUGH OF HOLBORN; AND

G. B. SHIRLAW, L.R.C.P.E.
ASSISTANT MEDICAL OFFICER FOR A.R.P., METROPOLITAN BOROUGH OF BATTERSEA; FORMERLY MEDICAL OFFICER IN THE SPANISH ARMY

IN order to be able to outline a medical A.R.P. scheme that can be put into force at once—that is, a short-term scheme—it is first necessary to have a long-term policy. It should then be possible to take the long-term policy and see how it can be modified in accordance with short-term circumstances and limitations without losing its essentials. The short-term scheme should also be designed so that it can gradually be merged into the long-term scheme by the addition of protection at each point in order of importance. We shall therefore begin by setting out what we think should be the general principles of a long-term policy. We shall deal mainly with the problem as it affects London, but much the same will apply to any large town. It should perhaps be said that our views are not necessarily those of the local authorities by which two of us are employed.*

Long-term Policy

The *objects* of a long-term policy are twofold. (1) To ensure that all casualties are treated in the best possible manner; this means that all casualties must receive full skilled attention as soon as possible. (2) To avoid further injury to casualties—i.e., to limit exposure to further danger; this is to be attained by evacuating casualties as quickly as possible from the danger areas to points as far away as possible, and by choosing the most protected routes. These objects must be reconciled with two overriding considerations: (1) that the work of the country must go on; and (2) that treatment and protection of casualties cannot be allowed disproportionately to affect the protection of the general public.

In working out an organisation to comply with these conditions it must be remembered that circumstances will vary from time to time, and that the relative importance of the two objects and the urgency of the overriding considerations will vary with them. It is, therefore, of first importance that the organisation should be flexible so that it can meet the varying demands. It should be arranged in advance so as to allow of rapid change, for when the conditions under which an organisation has to work are imposed from without a cast-iron organisation is a bad organisation.

The one unchanging datum that we must be prepared to face in air-raid conditions is that everything will be changeable, variable and unexpected. But this is no excuse for inactivity; on the contrary, we must do everything possible to build such an organisation as will be capable of working under such variable conditions. This organisation, in other words, must be perfectly elastic. It should be adequate to cope with the maximum number of casualties, and yet elastic enough to expand still more at a moment's notice. And not only to expand: it is just as important that it should be able to shrink without any loss of efficiency. It is clear that as the military protection of London reaches a higher degree of efficiency, and as the scale of attack falls off, the number of casualties will decrease, and then it would be wasteful to maintain all the material and personnel of the medical service in London, rather than to send them to a zone where they are more urgently required. Re-establishment to meet a reintensified scale of attack must also be possible.

It is assumed that in any long-term conditions there will be in operation a sound organisation of deep shelters and evacuation, and that the number of casualties will be relatively small. As a corollary there will be a sufficiency of surgeons and other skilled personnel. There will be plenty of transport and so it will be possible to pick the best of alternative methods. Communications—underground telephone cables, short-wave wireless—will be protected. Hence organisation can be relatively precise, and more or less laid down in advance to meet all the possible alternative circumstances.

CLASSIFICATION

In any system of casualty-clearance more capacious than that in use for peace-time street accidents classification is of cardinal importance. Indeed, if more than one casualty is carried into a hospital at a time, even in peace, classification is immediately the first action taken. The reason is obvious. A surgeon can only attend to one patient at a time; to decide which patient should be attended to first is classification. All experienced military surgeons agree that this classification is the most important problem in casualty-clearance. Classification is not a thing that takes place at one point and one time only. It is done when the patients are first seen by an uninjured person, and it is repeated at each stage in their progress until they have reached the point where their recovery will be completed and have there received final surgical attention. It follows that the more accurate the first classification the better. And as skilled surgical treatment must of necessity be preceded by skilled surgical classification, the sooner casualties are classified by a surgeon the sooner urgent cases can be operated on. The proportion of really urgent cases which require operation at the earliest possible moment may be small, but such cases must be taken into consideration, and there is therefore reason, other things being equal, for moving the skilled classification as near to where the casualties are taking place (both in time and space) as is compatible with the other circumstances.

Another reason for moving skilled surgical classification up is that ideally a wound should be dressed as soon after it has been sustained as possible, and the dressing should not be removed for any purpose whatsoever until the patient is about to go on to the operating table. This cannot be done unless the first classification is skilled and accurate and precedes the application of the first dressing.

But classification must be adequate for the point in the line of clearance where it is carried out. If

* Since the publication of articles on this subject by two of us (*Brit. med. J.*, Suppl., Dec. 31, 1938, and Jan. 21, 1939) new data have become available. Consideration and discussion of this information have caused us to modify some of the views set out in those articles.

it is supposed to be skilful surgical classification it must be that. If it is not it is of little value. Classification by first-aiders is useful and good provided that it is elementary and such that the first-aiders can carry it out. To be concrete: a first-aider can upon occasion be called upon to classify cases into corpses, wounded and non-wounded; he should be able to divide patients into those he himself can classify roughly and those he is quite unable to classify. He should not go much further than this. His classified cases can be sent home, to the surgeon, or to the mortuary. They *cannot* be sent direct to the operating table. Nor can some of them be evacuated long distances and the rest evacuated short distances; further classification must take place. It follows that there is no advantage to be gained from moving the surgical classification right up to where the casualties are occurring if the conditions are such that the surgeon, in the interests of his patients (and his own safety) cannot do an accurate job. But we have already seen that if classification can be moved up it should be. We have therefore arrived at the important conclusion that, as the occasion warrants, classification must be moved up or made to keep back at a point of safety. Provision must be made for both, though the point of safety must, of course, be as close as is practicable.†

CLASSIFICATION EVACUATION POINTS (C.E.P.'S) AND MOBILE CLASSIFICATION UNITS (M.C.U.'S)‡

These considerations mean that a flexible organisation of C.E.P.'s and M.C.U.'s is necessary. The C.E.P. should be a point on a line of evacuation, fully protected from high-explosives and gas. It should have a very large space available for classification, rooms and equipment for operating, and surgical and other staff to classify, to operate, and to man the M.C.U.'s. It should have beds for the treatment of cases which cannot be moved, and it should have adequate decontamination arrangements. We have been forced to the conclusion that in almost every case the present hospitals are utterly unsuited to act as C.E.P.'s. They are not only unprotected; in most cases they are quite unprotectable. Moreover, they are usually in the wrong places, away from railway lines, and with impossible approaches.

The C.E.P. should be in charge of an area medical officer who should be executively responsible for the passive defence in the area served by his C.E.P. This should include casualty- and rescue-services, decontamination and kindred functions, but would naturally not include warden's services, shelter services, and so on.

The M.C.U. should consist of a team of classifying officers (who should be experts in surgical diagnosis) and ancillary personnel, adequately mobile in their own transport, capable of moving right up to the scene of damage and carrying out classification (only) on the spot. The M.C.U.'s should be based on the C.E.P.'s and their transport should be kept in adequately protected garages. The teams manning the M.C.U.'s should, of course, be part of the surgical classifying staff of the C.E.P. Staff would then not be wasted by remaining idle.

There should be adequate ambulance transport of a suitable type available at the C.E.P.'s. We do not propose to discuss ambulances in this article, but it is almost self-evident that the light ambulances used for collecting casualties must be located at the C.E.P. and controlled from there, and that ambulances must imply stretcher-bearer-dressers. Evacuating road-transport—i.e., buses and the like—should be available to the C.E.P. on demand, with a minimum constantly at hand.

The C.E.P. should be on an underground railway line and on a satisfactory road-evacuation route, for there are advantages and disadvantages in both methods of evacuation, for example:—

Road.	*Rail.*
Liability to congestion. Slow traffic.	Certain lines might be kept clear for surgical trains; therefore, quick traffic.
Suitable for short distances.	Suitable for long distances.
Even the best sprung ambulances on the best roads are uncomfortable at any but low speeds.	Owing to greater comfort trains can travel quickly.
Short time to load, rapid dispatch.	Long time to load full train. (With Diesel engines smaller surgical trains might be used.)
Difficult to attend to wounded en route. Can be stopped to attend to wounded.	Easier attention. Full-size trains cannot be stopped.
Wounded can be distributed in small numbers to various places.	Trains are suitable for serving hospital towns.

WORKING OF A C.E.P.

The area medical officer (A.M.O.) would be immediately informed when damage had taken place in his area. He would be kept informed of the general situation both in his area and along his possible lines of evacuation. Taking into consideration all relevant factors—the scale of attack, number of casualties, probability of further attack, state of the roads in his area and along his lines of road and rail evacuation—he would decide whether to send out ambulances and M.C.U.'s or ambulances alone. If ambulances went out alone, then all wounded would be brought to the C.E.P. and dealt with there. If M.C.U.'s went out with the ambulances, the responsibility of deciding which cases should be brought to the C.E.P. and which should be evacuated direct by road would rest with the surgeon in charge of the M.C.U.'s.

Arrived at the C.E.P., casualties would be accurately classified and either prepared for evacuation or sent to the immediate treatment beds. Evacuation from the C.E.P. would be by hospital-train or by road, according to the exigencies of the situation. In our opinion long-distance evacuation where it is possible is much to be preferred to short-distance evacuation—it is better to send a patient 200 miles from London rather than 20 miles.

The A.M.O. would be in full executive control of his C.E.P. and of the casualty and other related services in his area. He would therefore have to be a man of considerable organising ability. He would have a staff of competent experts such as a consulting surgeon, a railwayman, a road-transport man and engineers. He would have to keep au fait with the full situation and be responsible for ensuring that evacuation flowed smoothly and rapidly, that his

† Another reason for having facilities for classification above ground is that if the main classification point is underground beside a tube line, time might be lost in taking patients there if those patients had immediately afterwards to be evacuated by road.

‡ The names given here may not be the best possible; they are chosen because they describe the function of the units mentioned, and in order to avoid confusion with units in other schemes which have been elaborated.

beds were properly used, and that the superior authority was kept accurately informed of the position at his C.E.P. and in his area.

DRESSING-STATIONS §

The dressing-station (D.S.) has not been mentioned in this organisation because it is not a primary unit. It is, however, an important adjunct and provides one method of ensuring flexibility. In a long-term scheme there will be a system of deep shelters. Ideally this system should be intercommunicating and should also communicate with the C.E.P.'s. It is obvious that each shelter or group of shelters should have in it a place where medical equipment would be available and where first-aid and decontamination could be carried out. In a long-term scheme these would be the D.S.'s. Casualties finding their way into the shelters could have first-aid treatment there and then be passed underground to the nearest C.E.P. Possible circumstances where this system might be deliberately used by the M.O. in charge of the M.C.U.'s or the M.O. in charge of the ambulances will readily suggest themselves. In a short-term scheme the D.S.'s become of considerable importance, as will be seen later.

SUPERIOR ORGANISATION

The key point of the scheme around which the entire organisation should revolve is the C.E.P. There must, however, be a superior organisation. In a long-term scheme this would seldom be called into executive action; its function would be largely informative. It would only have to take action in the unlikely event of any part of the local organisation breaking down. It would then have to make alternative arrangements by designating one or more C.E.P.'s to serve the area of the one which had been put out of action or which was in danger of receiving more casualties than it could deal with. The exception to this rule would be that the superior authority would have the responsibility of moving M.C.U.'s, surgical teams, ambulances and ambulance trains from one C.E.P. to another, or from more distant places.

* * *

The scheme we have outlined seems to us to meet the essentials of the problem as well as any that has yet been put forward. It ensures that treatment will be the best and earliest possible in the particular circumstances and that it will not be delayed in order to protect the casualties when such protection is not necessary. On the other hand, it ensures that when protection is necessary it will be given without delay, and may, in exceptional danger, be given exceptionally quickly (by using the D.S.'s). It takes the overriding considerations properly into account. It is in essence *flexible*.

A further point in its favour is that it does not depend upon impossible feats of organisation. The A.M.O. is called upon to be a competent organiser, but he is not called upon to be an organising genius: all that he will require for success will be accurate and continuous information. A scheme which depended upon an unlimited supply of geniuses would fail in the first ten minutes.

Short-term Policy

We propose now to set out the short-term data, and to see how the long-term scheme must be modified to meet them. If the resulting scheme proves to be workable there will be strong presumptive evidence that it is the scheme of choice. It should be stated here, however, that in our considered opinion unless there is a proper system of deep shelters and evacuation no medical organisation, however ingenious and however courageously worked, can be immune from possible breakdown. So far as we know every responsible member of the medical profession who has expressed himself on the subject is in agreement with this statement.

SHORT-TERM DATA

(1) Conditions of safety will vary in each district.
(2) There will be few deep shelters.
(3) There will be very many casualties.
(4) Surgeons and ancillary personnel will be insufficient.
(5) Transport will be scarce.
(6) Telephone communications will be relatively unprotected and short-wave wireless unavailable in any quantity.
(7) Organisation will therefore have to be the most flexible possible, and no method of attaining the objects which is compatible with the overriding considerations must be left out of account.

To take these points in order:—

(1) Varying conditions must entail local variations in the scheme, and where there is a high probability of large numbers of casualties extra provision will have to be made.

(2) It will not be possible in a short-term scheme to have specially constructed C.E.P.'s; where they cannot be found in existing tube stations, or in tube stations enlarged for the purpose, they cannot be had at all. What then is the alternative? The best alternative is a steel-framed building—e.g., garage, warehouse or factory—with its basement strengthened and protected against anything but direct hits. In a modern steel-framed building of many stories only an armour-piercing bomb would be likely seriously to damage the basement, even by a direct hit. It is probable that few armour-piercing bombs will be used, so that though the alternative C.E.P. is a bad second it seems to be possible.

(3) How can the greatly increased number of casualties be dealt with? The only way is by making classification as efficient and as rapid as possible. This implies more classification space at the C.E.P., but it also implies more surgeons and classifying surgeons, and these there will not be.

(4) Shortage of surgeons will have to be met, so far as possible, by loading the balance in favour of evacuation and by using the very best surgeons for the job of classification; the other surgeons would be used to the best advantage at the base hospitals or in hospital towns, where they would be fully employed all the time and where each man would be doing the work he was best suited for.

(5) Scarcity of transport is to be met by increasing the flexibility of the evacuation line. In other words, the balance of decision will be loaded in favour of the form of transport which is freest.

(6 and 7) The vulnerability of communications is of fundamental importance, for the success of the short-

§ We have dropped the name of first-aid posts because the first-aid post has been so widely publicised that its would-be functions might be confused with those which we consider essential for a dressing-station. The first-aid post seems to be dependent upon the concept of "walking wounded." We cannot see that this concept has any basis in reality as a measure of the gravity of the injury, for some lightly injured cannot or will not walk, whereas some seriously injured can and do. There is at present a patient in hospital who has been there for the last six months, and who walked 8 km. with four bullets in his thorax. Had he had a relatively minor injury to his foot he could not have walked so far.

term scheme must depend on its flexibility, and flexibility is entirely dependent upon communications. It is obvious that an enormous effort should be exerted to ensure that communications are improved as quickly as possible.

The short-term scheme will, therefore, differ from the long-term in four ways. First, the C.E.P.'s will nearly all be in the basements of steel-framed buildings. They will have more classification space and relatively smaller operating space and equipment. Beds for the immediate treatment of casualties will probably have to be detached to other buildings. (To hospitals, if suitable hospitals are available, of which there are very few. Unsuitable hospitals will be completely closed down, and the public informed. The public will not be told where the immediate treatment of casualties is being carried out; this is to avoid panic-stricken crowds breaking in and disorganising the work.) Steel-framed hotels and blocks of flats are in most cases eminently suitable for rapid conversion. Secondly, each major air-raid will be a problem in organisation; the A.M.O. will have a more difficult job. Thirdly, the superior authority, instead of intervening only occasionally and in exceptional circumstances, will have to do so regularly, and in most cases. Finally, direct underground collection of casualties from D.S.'s to C.E.P.'s will, of course, be impossible. The D.S.'s will be located in steel-framed buildings, in tube stations if possible, and other relatively safe places. It will be necessary to use them to the full, however, as advanced classification posts and as decontamination stations. It may be necessary to turn over the functions of a wrecked C.E.P. to one or more D.S.'s.

* * *

We think that this modified scheme is the best makeshift available. Given intelligent administration by the superior authority and adequate communications it would not be the first of the country's essential services to break down. It is as flexible as possible. It balances the two objects of our long-term policy fairly well. It reduces the exposure of those dealing with casualties to a minimum. It does not make impossible demands on the country's transport or other essential services, and the demands that it does make are such that they can be met by the parts which are under least pressure. Nevertheless, it should not be forgotten that it is only a makeshift. It should be set up immediately, but it should forthwith be modified more and more towards the long-term scheme, the vital points being the first to be fully protected. We do not advocate peace of mind on this short-term scheme—in the light of recent technical reports the long-term scheme is thoroughly practicable. Nothing less will provide the adequate medical organisation for which every patriotic doctor must honestly wish.

Conclusions

Long-term scheme.—(1) Fully protected Classification Evacuation Points should be built. These should be carefully sited with lines of evacuation by rail and road, and should have plenty of space for classification, facilities for the treatment of the relatively small number of casualties who would have to remain in the danger area, and adequate staff. They should be the medical headquarters for the areas they serve. (2) The present hospitals should be closed; most of them are intensely dangerous and even the best are not safe enough for a long-term scheme. (3) There should be Mobile Classification Units consisting of teams of classifying surgeons and their staff who could go to the scene of bomb damage and classify on the spot, if conditions allowed. (4) Both road and rail evacuation of casualties should be arranged for, so that the route best suited to the circumstances could be used. (5) Dressing Stations should be ancillary rather than primary units in the organisation. (6) There should be an effective superior organisation to coördinate the work. (7) The entire organisation should be highly flexible, to meet rapidly changing circumstances.

Short-term scheme.—Many of the points of the long-term scheme may take many months to put into operation, but there is a great deal which can be done at once. (1) The Classification Evacuation Points should be put in steel-framed buildings, and not in old and dangerous hospitals. (2) The hospitals should be closed. (3) Flexibility is even more important in the short-term scheme than in the long-term, and attention should therefore at once be directed to the improvement of communications.

TUBERCULOSIS IN WALES

REPORT OF THE COMMITTEE OF INQUIRY

ON Tuesday appeared the long-expected report[1] on the anti-tuberculosis service in Wales and Monmouthshire. The committee, which consisted of Mr. Clement Davies, K.C., M.P., and Dr. F. J. H. Coutts, C.B., was appointed in September, 1937, by Sir Kingsley Wood, then Minister of Health, at the request of the King Edward VII Welsh National Memorial Association.

Tuberculosis is a relatively more serious problem in Wales than in the rest of the country; the decrease in mortality from tuberculosis has been less in Wales than in England or Scotland. The excessive mortality in Wales occurs among young adults aged 15–25 and to a lesser degree in the age-group 25–45. In the former group the mortality-rate has been practically stationary since 1911–20; indeed, in the case of females it has risen slightly. The female rate in this group is 67 per cent. higher in Wales than in England and 60 per cent. higher than the male rate in Wales. Seven of the Welsh counties (Caernarvon, Merioneth, Anglesey, Cardigan, Pembroke, Glamorgan, and Carmarthen) show the highest average crude death-rates over the 7-year period 1930–36 of all the counties in England and Wales. There is evidence of the existence of "black spots" in many of these counties and in Wales generally.

A fatalistic outlook towards tuberculosis is particularly strong in Wales and still leads to the concealment of the disease and considerable delay in getting patients to seek medical advice. For practical purposes racial susceptibility *per se* is a minor factor in causing high mortality from tuberculosis in this country and there is no reason for a fatalistic outlook. If there is any racial susceptibility, that is surely, the committee remarks, an additional reason for more vigorous endeavour to deal adequately with other controllable factors. In many areas in Wales deplorable conditions exist in regard to housing, nutrition, and conditions in schools; these explain only too well why the incidence of tuberculosis has not decreased as rapidly as might be expected.

1. Ministry of Health: Report of the Committee of Inquiry into the Anti-Tuberculosis Service in Wales and Monmouthshire. London: H.M. Stationery Office. Pp. 291. 4s. 6d.

One of the most effective preventive measures against tuberculosis is the segregation of the infected person, particularly the advanced case with positive sputum. Obviously the importance of this measure is greatest in districts in which houses are small and insanitary and the whole environment is unsatisfactory. The committee found, however, that it is in those areas in which housing accommodation is bad and home isolation impracticable that there is most reluctance to take advantage of hospital provision and a tendency for advanced cases to demand discharge from hospital.

WELSH NATIONAL MEMORIAL ASSOCIATION

This association, which is responsible for the treatment of tuberculosis in Wales in sanatoria and dispensaries, has the status of a national scheme and the unique advantage of appealing to national sentiment. The inquiry made it clear that a scheme on a national rather than a county basis possesses solid advantages. It permits of the provision of special institutions for different types of tuberculosis on a scale impossible as a rule for individual local authorities and it makes it easy to obtain the services of consultant specialists of high standing. It offers men who are interested in clinical medicine a career with opportunities of advancing in status and salary and of becoming recognised experts in tuberculosis.

The national scheme has, in the committee's opinion, suffered from the tendency on the part of the community to look on treatment as the beginning and the end, and to forget that the main line of preventive effort is outside the sphere of the tuberculosis officer. But these difficulties would not be met by breaking up the national scheme, transferring the dispensary service, and leaving the association as a mere hospital providing authority. It would still be as necessary and as difficult to secure adequate coöperation between tuberculosis officers and local authorities. As regards hospitals fully equipped for surgical operations it is considered that three hospitals would meet the need of Wales; in view of the scattered population, smaller hospitals of a simpler type would be valuable adjuncts to these. Institutions of 50 beds in each dispensary area might be provided for (*a*) observation; (*b*) education in mode of life; and (*c*) prolonged segregation. They would fit in well with any general regional hospital schemes. But the committee has grave doubts about spending large sums in improving or extending existing unsuitable institutions; as soon as substitute beds become available some of these might profitably be closed unless they fit in with the general scheme already outlined.

The actual waiting-list of the association is 300–350; but the potential waiting-list (estimated from particulars prepared by the tuberculosis officers) of those who ought to be in hospital for observation or treatment is nearer 1400—which means that 700 new beds are needed. The higher figure works out at 121 beds per 100 deaths, which is above the figure for England but considerably lower than in Scotland and in certain overseas countries. There is room, as suggested by the association, for a new hospital of 200–250 beds in the Swansea district; but if this is provided it is doubtful whether the South Wales Sanatorium need be fully equipped for thoracic surgery.

WORK OF THE DISPENSARIES

That the medical staff of the association are recognised by general practitioners as experts is shown by their readiness to send doubtful cases for consultation: the proportion of such references per 100 deaths is higher than in England. There seems to be a tendency in Wales to rely on X-ray examination rather than that of sputum. Both methods should be fully employed. The tuberculosis officers do more home visitation than in England; health visitors do less, and the committee regrets it. Neither country has a good record for the examination of contacts; and in Wales, as elsewhere, it is precisely the young adult who is most reluctant to present himself for examination. The efforts of all concerned—family doctor, tuberculosis officer, medical officer and health visitor—should, the committee feels, be directed towards extending the range of contact examination. The interest of the tuberculosis officer should not end with his dispensary and residential cases; anyone who has come under his observation should remain his concern after systematic treatment has reverted to the general practitioner.

In 1936 53·6 per cent. of new adult patients diagnosed as tuberculous were sputum-positive on first examination and of these half were advanced cases; 55 per cent. of young adults, aged 15–35, were sputum-positive on first examination. It is recognised that late notification may be due to the delay of the patient in consulting his doctor at the first onset of illness, but there is still a tendency in Wales to delay notification. If, the committee remarks, it were more generally realised by practitioners that it was as much the tuberculosis officer's job to eliminate as to diagnose the presence of tuberculosis, much valuable time would be saved. Moreover, if steps were taken more frequently, in cases of bronchitis, asthma and persistent colds, to exclude tuberculosis by X-ray and sputum examinations, a considerable number of cases of tuberculosis would be recognised at an earlier stage. Some practitioners whose experience in tuberculosis is based mainly on advanced cases are apt to look lightly on a case which does not present the so-called classical symptoms.

PREVENTIVE MEASURES

In large areas in Wales the responsibilities (under the tuberculosis regulations) of local authorities for discovering the source of infection, disinfection, and the like do not appear to be properly realised. Trained health visitors appointed by the authorities are required in every area for investigation of environmental conditions, with full coöperation between the M.O.H. and the tuberculosis officers. Many local authorities have not taken proper advantage of the powers and assistance given by Parliament in the matter of housing. In the rural areas, villages and small towns there are hundreds of houses which are unfit for habitation and in the more remote counties the old-fashioned Celtic type of cottage may be found in which families live under the most primitive and often overcrowded conditions. Whilst giving full weight to the special difficulties of the rural areas the committee is of opinion that most rural authorities have fallen far short of their obligations.

There are schools still in use in Wales in which the conditions lower the vitality and lessen the resistance of children to disease. The committee would like to see such schools closed and more attention paid generally to heating and sanitary arrangements and facilities for drying wet clothes. There is also scope for much improvement in the provision of milk and meals in schools; the standard in these matters should be high and uniform throughout Wales.

It is of immense importance to ensure good nutrition during school life as a safeguard against the stresses of early adult life. In Wales, especially in the rural areas, recent changes in food habits have not been beneficial; on the whole, nutrition is not so good in the north as in the south, and it is worst in the western rural counties. Insufficient use of milk is one of the serious defects. The garden is neglected and few housewives take the trouble to cook vegetable soups and stews. The staple diet is tea, bread and butter, sometimes with jam, supplemented by prepared foods; practically no green vegetables are consumed. Poverty is by no means the chief factor in malnutrition in Wales, wrong choice of foods, ignorance and carelessness being much more responsible. Witnesses who stressed the importance of poverty *per se* came from areas where the rents were high. There is need in Wales, as elsewhere, to educate the housewife in the purchase, preparation and cooking of food.

ADMINISTRATION

The committee finds great disparity in Wales among local authorities in their performance of public-health services and in realisation of responsibility. The report draws special attention to the poverty of many areas of local administration. Weak administration is chiefly to be found in areas of small population with inadequate resources; apart from the stimulus of outside influences it finds little or no hope of advancement in vital matters affecting health. Finally disappointment is expressed at the small effort made in Wales to secure the appointment of full-time medical officers of health.

MEDICINE AND THE LAW

No Desertion During Insanity

THE Matrimonial Causes Act gave a right to petition for divorce where the respondent has deserted the petitioner for three years without cause. In Williams *v.* Williams, decided last week by Mr. Justice Langton, the respondent had spent part of the three-year period under restraint in a mental hospital. An insane person is incapable of forming any criminal intent, but it was suggested on behalf of the petitioner that in a civil matter (such as divorce proceedings) the court might be justified in inferring that the desertion would have continued for the three-year period if the respondent had not been insane. The judge found himself unable to draw any such inference. Matrimonial desertion is a wilful and conscious act; an insane person is incapable of mental or moral activity.

The husband, after nearly ten years of married life, left his wife in May, 1933. On May 23, 1934, the magistrates decided that he had deserted her and was neglecting to provide her with reasonable maintenance. A month later he was certified under the Lunacy Act and placed under restraint. He has since remained under restraint in a slightly deteriorating condition of mental health. There was one leading case (Drew *v.* Drew) which seemed to be in the wife's favour. Mr. Drew left his wife, absconded to New South Wales to escape arrest on a charge of embezzlement, was brought back to England and was sentenced to 10 years' penal servitude. In the divorce court it was held that Mr. Drew, at the time of his flight, meant to desert his wife and did in fact desert her, and that the period of desertion would continue even though he had been brought back to England in custody. The court, in Mr. Justice Langton's phrase, refused to allow the desertion of Mrs. Drew to be interrupted by the mere misfortune of incarceration. It was possible, however, to distinguish the case of Mr. Williams from that of Mr. Drew. It was not the physical restraint placed upon Mr. Williams which constituted the real bar to a decree of divorce for desertion. The bar was the fact that, unlike Mr. Drew, Mr. Williams was (while insane) incapable of the intention to desert or to continue his desertion. A man without a mind cannot make up his mind to remain absent from his wife. But although the judge could not grant Mrs. Williams her decree for three years' desertion, he drew attention to the prospect that she will presently be entitled to petition on the ground of five years' insanity.

PARIS

(FROM OUR OWN CORRESPONDENT)

EPIDEMIOLOGICAL ASPECTS OF THE SPANISH REFUGEE PROBLEM

THE influx of Spanish men, women and children as refugees into France in the past few weeks is described by all eye-witnesses as indescribable. Some day, when the inhibitions of politics have disappeared vividly truthful accounts will no doubt appear in print. It is, however, already permissible to discuss openly certain epidemiological problems arising out of this situation. In the *Siècle Médical* for March 1 Prof. P. Chavigny of Strasbourg writes of the possibilities of a serious outbreak of typhus among the Spanish refugees; but interesting and timely as his communication is, its tone is that of a postgraduate lecture—a professorial rather than a journalistic achievement. A more disquieting communication is one by Dr. Jacques Sautet, of the Institut de Médecine et Pharmacie Coloniales de Marseille in the *Presse Médicale* of Feb. 25. He draws attention to the potential importance of Spanish recurrent fever which exists in North Africa as well as in Spain, but which has hitherto been unknown in France. It was discovered in 1922 by Sadi de Buen, and its *Treponema hispanicum* is transmitted to man by a tick, *Ornithodorus erraticus*. As this tick is unknown in France, the possibility of the disease developing here would have seemed highly improbable had not A. Sergent shown in 1933 that the same germ can be transmitted by a dog's tick, *Rhipicephalus sanguineus*, which, when the fancy takes it, bites human beings. Now this tick abounds in the south of France and farther north. With the advent of hot weather, this tick should be watched. Another danger foreseen by Dr. Sautet is that of malaria, which is endemic in certain parts of Spain. As he remarks, the refugees have by no means come only from Catalonia, and some of them may well be sources of malaria, particularly among ill-nourished children. He recalls in this connexion the recrudescence of malaria in Corsica during the late war when its hospitality was enjoyed by Serbian refugees.

ANTOINE BÉCLÈRE

A picturesque figure disappears with the death of Dr. Antoine Béclère at the age of 82. In 1893 he seemed to have mapped out his career for life as a bacteriologist, and he was already doing important

work on vaccination and the other problems of small-pox when he was so intrigued by Röntgen's discovery in 1896 that he threw overboard all his earlier laboratory work and devoted himself exclusively to radiology. As one of his biographers has said, to analyse the radiological work of Antoine Béclère would be to pass in review all the medical applications of X rays. The French Academy of Medicine elected him a member in 1906 and its president in 1928, and he was the founder of the Society of Medical Radiology. His best-known work was that on the radiotherapy of hypophyseal tumours and of uterine fibroids. His interest in research did not prevent his devoting much time to teaching, and during the war he acted as director of the radiological laboratory of the Val-de-Grâce Hospital.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM A PART-TIME PROFESSOR

III

THE recent election of Pope Pius XII reveals how deeply steeped in ancient tradition are the by-laws of our own Royal College of Physicians. It, too, elects its president without any formal proposal or nomination. On the day after Palm Sunday the fellows assemble. Each fellow writes down and places in a large silver urn the name of one of the fellows for whom he votes as president. In order to ensure that the president shall be "as required by the Charter of Henry VIII, a prudent person and one skilled in the science and practice of Physic," only fellows of at least ten years' standing are eligible. If one of the fellows receives two-thirds of the votes, he is elected; otherwise, the two names receiving the highest number of votes are balloted for. Except for the last provision the procedure conforms to that of a papal election. The selection of the president of the Royal College of Surgeons follows the more modern practice of electing him from among the members of its council by ballot. If no absolute majority is obtained a second and, if necessary, subsequent ballots are taken; in each successive ballot the name which receives the smallest number of votes in the preceding ballot is omitted until one name is given an absolute majority of the votes of the members of the council present at the meeting, whether voting or not. The relative merits of the two procedures need not be argued. Both in the past have succeeded in giving us presidents who not only fill their high office with becoming dignity but are also wise in counsel. But there is indicated a tendency which was noted over a hundred years ago in the *London Medical Gazette* (Feb. 18, 1837) which wrote of the College of Surgeons thus: "The existing Council . . . have shewn their determination to keep pace with the march of intellect and the improvement of the times. In these respects—we mean setting aside ancient prejudices—in gathering wisdom from passing events—and in rendering their institutions available to great national objects—we must say they have far outstripped their elder brethren in Pall Mall, and accordingly are their character and influence as a public body proportionately greater." I hesitate to subscribe to all the implications of this outspoken comparison but in one small instance would it not be wise for the Royal College of Physicians to follow the example of its younger relation? Only a little over half its fellows live in London so why not indicate, by changing the name to the Royal College of Physicians of England, that it is a national and not a metropolitan institution? It was in 1843 that the title of the Royal College of Surgeons was altered from "in London" to "of England"!

For some time Mr. Nathaniel Gubbins's stomach has been silent. The *Sunday Express* no longer conveys its weekly heartburnings to an interested and expectant public. Perhaps its pleadings have passed Mr. Gubbins by as "idle wind which he respects not," and it now lies

> "I' the midst o' the body idle and inactive
> Still cupboarding the viand,"

but resigned to the futility of registering its bitter and acid protests. Imagine then the interest aroused when I saw in a second-hand bookseller's catalogue "Memoirs of a Stomach," written by himself, that all who eat may read; with notes critical and explanatory, by a Minister of the Interior, 1853. I hastened to its purchase and I have no regrets, for though it abounds in the verbal infelicities of its period and evinces a strong homœopathic bias (and who would not forgive the stomach for preferring the infinitesimal dose?) it wittily and unobtrusively conveys wise counsel. It has done much to soften the hurt of deprivation resulting from Mr. Gubbins's stomach. It has done much to convince me that gastric humour, satire, and philosophy are generic rather than individual, and have altered little with the passage of time. In these memoirs I learned, for example, that the name stomach was of pure Saxon origin, being derived from the word "sto," to stow away, and "ach" or "hack," to break into small pieces; the consonant *m* is inserted for the sake of euphony. We have Dean Swift's authority for similar principles of etymology: "Achilles was the most valiant of the Grecians. This hero was of a restless, unquiet nature; and therefore, as Guy of Warwick was called a Kill-Cow, and another terrible man a Kill-Devil, so this general was called A-kill-ease, or the destroyer of ease; and at length by corruption, Achilles."

* * *

But my precious booklet not only laid bare most of the inner mysteries of the stomach, it revealed also the gastric origin of the *bagpipe*, a hitherto well-kept secret which I feel should now be given to the world.

An early Nordic King, who was also a skilled magician, sailed with his retinue from his Scandinavian home to Scotland, where he established himself for a time in one of the larger villages. The natives thereof paid him homage and appeased him with offerings of cattle, hides, and other valuables. When he was about to leave Scotland and return to his own kingdom a brave but rash Pict, recalling the story of David and Goliath, craved an interview with the King. This was granted and the Pict ushered into the royal presence exclaimed, "Why, O Monarch from over-seas, comest thou to levy taxes upon an

unoffending people? But Thor and Odin whom thou servest, have permitted this arm to avenge my country, and, rash man, thy last hour hath come." With these words the stone from his sling descended like a thunderbolt on—the empty throne of the King. The would-be assassin was so stunned that he made no attempt to escape and was borne into the inner chamber where on the throne sat the King as unconcerned as though he had not moved, and he spoke thus to the Pict: "It is ordained that if I pardon the villain who seeks my life, misery and war will light upon my people, and the portals of Valhalla will shut against me; therefore, thou must die. In recognition of thy patriotism, however, I shall render thy death an easy one instead of sending thee to the torture-chamber, where the cries of thy suffering would charm the hearing of the Furies. But their wrath must be appeased and the cries of agony which thou wouldst have uttered hadst thou been tortured must be perpetuated for ever throughout the land wherein thou dwellest. Thus is thy fate sealed." With these words the King cast a powder in the Pict's face and he sank to the ground—a corpse. At the King's command the chief swordsman ripped open the body of the dead Pict and, carefully extracting the stomach and œsophagus, laid them on the ground before the throne of the King, who, uttering strange oaths and waving his wand, exclaimed, "Change thou thy form, O thing of mighty use when in the living clay, and on thy tube let there be stops and key-notes, and in thy bag let there be wind, and let the natives of this region have cunning to play upon thee, and let thy tones be ever as the shrieks of a tortured man, so that the Furies may be satisfied, and let thou be called now and hereafter *Bagpipe*, so that what I spoke may come to pass, even unto the letter." Having thus spoken the courtiers saw before them the first bagpipe and they raised it from the ground and sought a native to play upon it. When they found one they all rushed to their ship, stopping their ears, and never again did they set foot on the shores of Scotland.

* * *

Which leads me to ask if Shylock's reference, "And others, when the bagpipe sings i' the nose, Cannot contain their urine," indicates that Shakespeare was acquainted with musicogenic epilepsy?

PUBLIC HEALTH

Mental Health in London

THE mental-health services of the London County Council are so extensive—the council is responsible for the care of over 38,000 mentally abnormal patients—that the annual report,[1] detailed and informative though it is, cannot do more than hint at the variety of problems dealt with. One would like to know, for instance, why the greatest number of applications for admission has for several years always been during the month of July or August; why the incidence of new cases of mental disorder is highest in the Holborn, St. Pancras, St. Marylebone and Hampstead areas; why the proportion of voluntary patients who have to be readmitted in the same year as they left hospital is higher than that of certified patients, and whether this is directly related to the higher proportion of annual discharges to admissions in the voluntary group. Other interesting questions are the types of patient mainly concerned in readmissions, the percentage of which to patients "discharged recovered" is remarkably similar for all the mental hospitals. The figures since 1895 indicate that more than 30 per cent. of those so discharged relapse sooner or later, 11 per cent. doing so within twelve months after discharge. It is also noteworthy that just on two-thirds of those "discharged recovered" last year were between the ages of 25 and 54, a slightly higher proportion than the admissions at this age-group bore to all patients admitted.

Among many arrangements made in a more or less experimental way may be mentioned the provision (by the British Institute of Adult Education) of a series of lectures and discussions at St. Ebba's Hospital, and the giving of a fortnight's holiday at the seaside during the summer to patients who had no friends to take them out on daily or week-end leave. Such items in the report testify that along with routine care and large plans of modernisation and development there is a concern for those minor amenities which make the difference between humane interest and impersonal institutionalism. This concern is evident in many passages, too, of the section of the report dealing with the mentally defective. The council has for long maintained a number of occupational and craft centres for defectives who are under supervision or guardianship. The admirable results are shown in a table of occupations followed by defectives under statutory supervision: 970 males and 976 females were in employment at the end of the year. The problem of accommodation for defectives grows more difficult, for there has been for many years an excess of admissions over exits: in order to cope with this, 896 extra beds are proposed. The net cost to the council of the care of defectives, both intra- and extra-mural, for the year was £554,000; the cost per head for those in institutions varied, but was mostly in the neighbourhood of 30*s*.

We have had occasion to remark, when commenting on previous reports of the L.C.C. mental-health services, that the nomenclature under which diagnoses are recorded (table 25) is rather absurdly out of keeping with the remarkable progressiveness shown in every other section. Even if official returns have still to be couched in a nosological language long obsolete, it would seem appropriate for the council to follow, in its own report, the current usage of its psychiatrists, which is that of their colleagues the world over.

1. Annual Report of the Council 1937. Vol. vi. Mental Health Services. London: P. S. King and Son. 1938. Pp. 73. 1*s*.

Dr. Porter's Retirement

On Wednesday Dr. Charles Porter retired from the position of medical officer of health for St. Marylebone which he had held since 1908, and it is fitting to put on record here something of what his tenure of office has meant to that great borough. Porter, who was drawn into public health by Andrew Balfour, came to Marylebone from Finsbury (where he had succeeded Sir George Newman), and before that as assistant medical officer in two northern cities he had taken the initiative in school hygiene. In Marylebone, although he had nothing to do with the establishment there of the first infant-welfare clinic, he had much to do with the later developments in the care of mother and child. The tuberculosis scheme was the first in this country and the open-air school in a band-stand in Regent's Park made London aware that tuberculous children more than others require sun-

shine and fresh air. When these schemes were municipalised the borough went on to provide health centres and special clinics which included child guidance on the one hand and on the other the application of sunlight and massage and the hygiene of footwear. There was, it may be remarked, at no time any friction between these plans and the L.C.C. scheme for the medical treatment of school-children. But the most concrete memorial of Porter's work may be seen in bricks and mortar. Had it not been for his success in persuading the L.C.C. of the safety of the one-pipe system of drainage, neither Broadcasting House nor the Cumberland Hotel would now stand where it does; and those who remember the drab horror of Lisson Grove in its old days will see his face in the attractive blocks of flats which now cover the ground.

L.C.C. Whole-time Consultants

For several years the London County Council has considered increasing the efficiency of its hospital services by the appointment of whole-time specialists, but owing to the work involved in reorganising the hospitals little progress has so far been made. The council is, however, now to appoint a whole-time cardiologist at Lambeth Hospital and a whole-time fracture specialist at St. James' Hospital, Balham. The cardiovascular unit at Lambeth has been an outstanding success. Beginning in a small way in 1936 it now has 50 beds, and it will probably be necessary before long to provide a similar unit north of the Thames. At the fracture unit at St. James' Hospital 735 inpatients were treated during 1937, and there is a large and growing outpatient department with provision for massage and the like. The specialist to be appointed will devote the greater part of his time to this unit and the rest to the supervision of other of the council's clinics. The salary of the new specialists, who may be appointed from either inside or outside the service, will be £1250 a year rising to £1500.

Infectious Diseases in the United States

The central department of the United States public health service differs considerably from our own Ministry of Health, for each state has its own public health service and makes its own laws, though the department has direct control over matters of national rather than local importance.

To the English reader the most interesting section of the surgeon-general's annual report is the last, which deals with the changes which have taken place in the distribution and forms of the infectious diseases, for new varieties of the old diseases that trouble civilised communities in the temperate zones and diseases not previously recognised often originate in the United States. The report for 1938 [2] describes several varieties of typhus which have not yet appeared in this country. Of these the most serious is Rocky Mountain fever, which year by year extends its range, though the number of cases does not increase and the disease is lessening in fatality. Last year Rocky Mountain fever was found as far east as Ohio and Massachusetts. Another disease which is spreading is pasteurellosis.

Plague was introduced into California, probably from China, some decades ago, and must now be considered endemic, though as a human disease it has not so far been alarming. The native ground squirrels were the first, and are still the main, reservoir of pasteurella, but last year plague spread to tree squirrels. Besides attacking new hosts the infection is extending geographically, for year by year fresh areas are discovered in which the rodents are affected. A few human cases occur annually, but the mortality has hitherto been low. It was therefore hoped that if plague became epidemic in man it would be in a comparatively mild form, but last year in a few instances the disease assumed the fatal pneumonic form, in which the infection can spread directly from man to man very rapidly. The presence of potential plague has been an anxiety to the United States health department for many years and this latest development will do nothing to lessen it. Poliomyelitis is shifting its age-incidence. This has been happening in all parts of the world and is shared by other children's diseases, notably diphtheria. Most of the endemic diseases which in civilised communities mainly affect the young have mortality curves which run parallel to their incidence curves, but measles and whooping-cough are exceptional in that their mortality curves remain peaked in the first two years of life in spite of the gradual shift of maximum incidence to later ages. Trichinosis is widely prevalent in the United States and extensive investigations have demonstrated that its incidence is as high as 17 per cent. of the total population. The report points out that the control of this disease necessitates state regulation of the garbage-feeding of swine. Leprosy does not spread in the United States except to a slight extent along the Gulf coast, but Weil's disease, previously unsuspected, has been found to be endemic in many states, including New York.

Improved Dietary in Casual Wards

In accordance with an order [3] issued by the Minister of Health persons in casual wards which form part of a public assistance institution may now receive the same midday meal as the resident inmates of the institution, provided that this meal contains meat or fish. The casual ward dietary will moreover be made more palatable and less monotonous by the provision of a pint of tea with dinner; of jam, marmalade or treacle at supper; of meat in the midday meal handed to persons aged 12 years and upwards on discharge; and of cheese as well as bread and butter to children of 8 to 12 on discharge.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 4, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1656; diphtheria, 1110; enteric fever, 18 (29 "expected"); pneumonia (primary or influenzal), 1541; puerperal pyrexia, 221; cerebro-spinal fever, 50; acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 5; dysentery, 42; ophthalmia neonatorum, 84. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 10 was 3335, which included: Scarlet fever, 639; diphtheria, 769 (carriers, 47); measles, 9; whooping-cough, 869; puerperal fever, 17 mothers (plus 7 babies); encephalitis lethargica, 300; poliomyelitis, 2 At St. Margaret's Hospital there were 22 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from smallpox, 1 (0) from enteric

(*Continued at foot of next page*)

2. Washington: U.S. Government Printing Office. Pp. 184. 60 cents.

3. Statutory Rules and Orders, 1939, No. 242. H.M. Stationery Office. 1*d*.

LETTERS TO THE EDITOR

PREVENTION OF POSTOPERATIVE TETANUS

SIR,—We believe any reasonable person who reads your comments last week on the recent case of puerperal tetanus would gain the impression that you had difficulty in understanding how the tetanus spores in the pad could be the cause of the fatality, but that their presence was disturbing. Personally we have no difficulty and are, therefore, the more disturbed.

Our situation is as follows: Being known to be interested in tetanus, it has come to our knowledge that cases of postoperative tetanus are commoner than any one surgeon appreciates. There is almost no mention of them in the literature except in relation to catgut. In any individual case it is impossible to prove that the infection derived from the dressing, but taking all cases together the evidence seems reasonably conclusive to us that it did. At any rate we feel bound to ask you to give publicity to the following matters:—

(1) Of recent years various wools have been introduced as surgical dressings. Practically all are charged with tetanus spores and the spores of other anaerobes and aerobes. The use of determinative adjectives in connexion with these materials has led to the belief that "wood wool," for instance, only is in question, but the same applies to surgical white wool, though to a smaller degree.

(2) These materials are used as accessory dressings or paddings without sterilisation in the belief that if they are not in contact with the wound no harm can arise. But (*a*) if the wool is continually rubbed on the skin, as by a splint, an abrasion may be formed which may be inconspicuous but nevertheless a suitable nidus for germination; (*b*) if the wool is wetted by a nutrient fluid, tetanus bacilli do demonstrably grow and will then be in fluid connexion with the wound however remote.

(3) These materials are also used after sterilisation. It is, however, a fact that wool after undergoing the process of sterilisation as sometimes carried out is still contaminated with viable tetanus spores. In some cases sterilisation is carried out by someone who has no knowledge of the principles involved and is not overlooked by anyone who has. He does not know that a roll of wool is not easy to sterilise and that a parcel of wool can scarcely be sterilised at all.

These three statements, made with studied reserve, reveal a situation which is not generally known to users of wool dressings and it is our hope that publicity in your journal will lead to appropriate action.

We are, Sir, yours faithfully,

PAUL FILDES,
JAMES MCINTOSH.

Middlesex Hospital, W.1, March 13.

TOLERANCE OF PHENOL VAPOUR

SIR,—In their important paper on atmospheric and surface sterilisation by aerosols in your issue of Feb. 25 Dr. Pulvertaft and his co-workers, referring to phenol vapour as a possible agent for the sterilisation of air, state that "a concentration of phenol capable of sterilising air is quite intolerable to human beings," and that "a concentration in air is required which no human beings could tolerate even for a few seconds." I do not know the source of these statements, but as regards the amount of phenol vapour that will effect surface sterilisation they are quite incorrect. I have done many experiments in which pure phenol is vaporised by heat by means of a vaporiser manufactured by Messrs. F. C. Calvert. These experiments were performed in a room of 1400 c. ft. capacity, and broth cultures of *B. typhosus* and several other organisms were spotted on to filter-paper slips and exposed in the room. It was found that an amount of phenol of the order of 35 grammes per 1000 c. ft. capacity killed all these organisms with an exposure of one hour. Such a concentration of phenol is perfectly tolerable to man, the room may be entered immediately it is opened without inconvenience, and in one instance a mouse was in the room during the whole experiment, and suffered no harm. In another instance a mouse was exposed to double this amount of phenol, again without harm, by exposure to the vapour of 85 g. of Calvert's vaporising fluid A per 1000 c. ft. for an hour; this fluid contains 85 per cent. phenol. Messrs. Calvert inform me that office rooms and hospital wards with their occupants have been "fumigated" with amounts of phenol of the order of 15 g. per 1000 c. ft. for periods during several successive days without inconvenience or harm to the occupants.

I do not think it is quite clear from the paper how the figures stated for the effective concentrations of the aerosols were arrived at. For instance, it is stated that chloramine-T is effective in a concentration of 1 in 12,000,000. Calculating by weight of substance to weight of air in volume treated, approximately 1/160 gramme of chloramine-T would give a concentration of 1 in 12,000,000 in a room of 2000 c. ft. capacity. Is this correct?

I am, Sir, yours faithfully,

Greenwich, S.E.10, March 11. R. TANNER HEWLETT.

STANDARDISED NAMES FOR ENDOCRINE PRODUCTS

SIR,—Endocrine therapy is difficult by reason of our comparative lack of knowledge of endocrine physiology and the uncertain results of the application of the findings of animal experiments to clinical medicine. But these difficulties are increased by the multiplicity of names that are given to identical glandular products by the various drug manufacturers. Some of these substances have a definite chemical structure and therefore should be known by a single name, as, for example, sodium chloride, which denotes NaCl. At the moment I can recall six different names

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(*Continued from previous page*)

fever, 4 (0) from measles, 1 (0) from scarlet fever, 19 (2) from whooping-cough, 26 (7) from diphtheria, 43 (13) from diarrhœa and enteritis under two years, and 284 (69) from influenza. The figures in parentheses are those for London itself.

The number of deaths attributed to influenza is maintained, the totals for this week and the nine preceding weeks (working backwards) being 284, 285, 255, 265, 210, 173, 223, 214, 144, 89. Of these 284 deaths 149 were reported from the South-eastern Area, Croydon contributing 7, Walthamstow 6, West Ham 5; 63 were reported from the Northern Area, Manchester and Sheffield each contributing 6, Leeds 5; 43 from the Midland Area, Bristol contributing 8, Nottingham 7, Birmingham 6; and 14 from Wales, Rhondda contributing 6, Cardiff 5. Fatal cases of diphtheria were scattered over 17 great towns, Darlington, Liverpool and Sunderland each reporting 2. Sheffield reported 3 deaths from whooping-cough. The only death from enteric fever was at Nottingham.

The number of stillbirths notified during the week was 249 (corresponding to a rate of 38 per 1000 total births), including 42 in London.

under which the œstrogenic compound is sold, and there may be many more.

It would simplify therapy if the manufacturers would get together and standardise names which are applied to identical products, and it is difficult to see how they would lose in relation to each other if this arrangement could be made.

I am, Sir, yours faithfully,

London, W.1, March 13. ALECK BOURNE.

ERYTHEMA NODOSUM

SIR,—I feel that the evidence submitted by Dr. Hall in your last issue is hardly sufficient to justify his statement "that these three cases of erythema nodosum are of tuberculous origin can scarcely be doubted." The presence of two conditions in the same patient does not necessarily imply that the one is the cause of the other. Furthermore, it is not easy to make a definite diagnosis of enlarged mediastinal glands of tuberculous origin on radiographic evidence alone, nor is the significance of the Mantoux reaction in young children entirely beyond dispute. It is not denied that some cases of erythema nodosum may have a tuberculous ætiology; but such cases occur infrequently. It would be wise therefore to show that the incidence of the two conditions together is more than could be explained by coincidence.

The examination of contacts of cases of erythema nodosum is a suggestion worthy of further consideration.

I am, Sir, yours faithfully,

London, S.E.1, March 12. J. A. BROCKLEBANK.

PRONTOSIL IN RENAL ŒDEMA

SIR,—The case of renal œdema treated with sulphonamide reported by Dr. A. W. D. Leishman in your issue of Jan. 28 attracted my interest for I often encounter cases of very resistant renal œdema. Lately I had to treat a similar case.

A schoolboy of 14, previously healthy, was taken ill at the beginning of last November with an irregular pyrexia, headache, and epigastric pain. These symptoms lasted for over a month, but by Dec. 10 he was fit to go out of doors. A week later he noticed œdema of the legs and puffiness of the eyelids. He was then treated for a month by a general practitioner, who gave him a liberal protein diet. When I saw him on Feb. 2 his condition had become a great deal worse. He was pale and looked ill and had extensive general anasarca. Temperature normal, pulse-rate 110, hæmoglobin 65 per cent., B.P. 125/80. He had a short systolic mitral murmur, the pleural cavities and lungs were clear, but there was a moderate degree of ascites. The urine contained a large amount of albumin, granular and hyaline casts, and a few pus cells and red cells. Throat and tonsils were normal. I ordered him Alka-dextrose (P. D. and Co.), a tablespoonful every two hours, Mist. alba every morning, and a diet of orange-juice, lemonade, and caraway-water. After five days there was little improvement and the treatment was continued for three more days. On Feb. 10 the anasarca and albuminuria were still marked.

Alka-dextrose was then replaced by Calcium Diuretin tablets (Knoll), one tablet four times daily. After ten days the reaction to treatment was still very slow.

I then decided to try Dr. Leishman's treatment, though I was rather nervous of untoward effects. Beginning on Feb. 22 I gave one tablet of Prontosil rubrum four times daily. On March 2 the boy came to see me and looked an entirely different person. The œdema and ascites had totally disappeared. The albuminuria was now reduced to a trace, the urinary deposit contained a few granular casts and very few pus cells. Pulse-rate 90, B.P. 120/80, Hb. 80 per cent. The systolic mitral murmur had gone. The boy was fighting for food. Milk, milk-puddings, rice and toast were added to the fluids he was taking, and prontosil was continued for four more days. On March 6 his general condition was good and he was feeling very well.

I agree with Dr. Leishman that the dramatic recovery must be due to the effect of prontosil on the infected kidneys.

I am, Sir, yours faithfully,

IBRAHIM ABDEL SAYED.

Beni-Suef, Egypt, March 8.

STERILISATION OF SODIUM-BICARBONATE SOLUTION

SIR,—I am in agreement with Dr. E. P. Poulton that solutions of sodium bicarbonate can be sterilised by heat, but I cannot regard his method as satisfactory. I suggest that a much simpler and safer method would be the one recommended by the British Pharmaceutical Codex whereby the solution is placed in an air-tight container and autoclaved at 115° C. for 30 minutes. The decomposition reaction is reversible on cooling and provided that no CO_2 is lost. It is essential, therefore, that the container should not be opened for one or two hours after the temperature has fallen to normal and that the container should be *perfectly* sealed during autoclaving.

When the container is a sealed ampoule, the conditions are perfect, but when a milk-bottle type of container with a spring-clip stopper, or a bottle with a screw cap or stopper is used, it is advisable to invert it with its neck below a solution of methylene-blue during the autoclaving and subsequent cooling processes. This will detect imperfect sealing. The bottle with the spring-clip type of stopper is not very reliable for this particular purpose.

No alterations in the pH of the solutions will occur if these precautions are taken and the solution should be quite clear. Should a slight flocculent precipitate form on standing it is from the glass which would be of an unsuitable quality.

I am, Sir, yours faithfully,

H. BERRY,

Dean, College of the Pharmaceutical Society.

Bloomsbury Square, W.C.1, March 13.

CRANIAL RADIOGRAPHY.—A course of lectures on cranial radiography will be given by international authorities in the Institute for Tropical Diseases at Antwerp from July 27 to 29. On the following day there will be a general meeting of radiologists and clinicians with a view to the foundation of an international society concerned with this branch of radiology. Further particulars may be had from Dr. R. Thienpont, avenue Rubens, 30, Antwerp, Belgium.

ROYAL HOSPITAL FOR SICK CHILDREN, GLASGOW.—During the past year nearly 7000 patients were treated in the wards of the hospital, and there were over 9500 attendances of outpatients. Associated with the hospital is a team of workers connected with the university who are able to collect scientific information about the health, welfare and treatment of children from this centre. The ordinary income was less than the expenditure by £15,000 but this was more than met by the extraordinary income, so that there is a financial surplus of over £3000.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By MEDICUS, M.P.

A BILL on London government was introduced into the House of Lords in February and is now being considered by a joint committee of the Lords and Commons. It is "A bill"—to use its own parliamentary phraseology—"intituled an act to consolidate with amendments certain enactments relating to local government in London." In plainer English it is a bill to consolidate existing laws concerning the London County Council, the metropolitan borough councils, their committees and officers, their powers to buy land, to borrow money, to levy rates to pay for services, to promote and oppose bills in Parliament and to elect their councillors, and a large number of other matters. The bill runs to 206 clauses and includes 8 schedules. The last of these is one listing "enactments repealed," the first being one of Henry VIII intituled "An Acte concnyng the amendment of Bridge in High Wayes." There are 55 pages of these acts, and the last is a part of "The Food and Drugs Act, 1938." It is this complexity of references, detail, amendments, and repealings that makes legislation difficult to understand. Furthermore, this complexity puts such a bill almost entirely in the hands of expert draftsmen and departmental officials, and in order that those concerned may be adequately informed and able to take a clear line on matters of principle it involves the employment of special parliamentary agents.

There are very many parts of this London Government Bill of great interest and among them some which especially affect the position of medical practitioners. At present there exists in local government legislation a valuable power, frequently and habitually exercised, of coöpting persons of special experience and knowledge on to the appropriate committees. This coöption is particularly useful on education and public health committees; but, whereas the London County Council and boroughs outside London may coöpt doctors or others on their health committee, the metropolitan borough councils may not. It is hoped that in the course of the passage of the London Government Bill through the House an amendment will be secured which will abolish this anomalous position. The power of coöption of doctors on to the metropolitan borough councils' health committee would be of great value, and medical men and women should have the opportunity of rendering this public service in the boroughs where they reside and where both their medical knowledge and local knowledge will be of most value.

The danger of the over-complexity of legislation and of "regulations" and "orders" arising out of legislation is shown in a curious and disquieting way in respect of the London County Council's arrangements and provision for the feeding of necessitous school-children. The London County Council in the days when Dr. Kerr was the school medical officer was a pioneer of school feeding. Now the L.C.C. is considerably behind many other local authorities. The L.C.C. has in its care about a tenth of the elementary school-children in England and Wales, but provides solid meals for only about 2·1 per cent. of them, whereas in county boroughs 5·5 per cent. are provided for. West Ham and East Ham provide meals for about 10 per cent. and 8 per cent. respectively, and they are areas strictly comparable with some of the poorer parts of London county. The reason for this difference is not a difference in the nutrition of children favourable to the L.C.C. area but a difference in the "regulations" and procedure leading to a restricted method of selection of candidates for feeding and further regulations dealing with unemployment and public assistance. Here is a matter on which medical representatives on the L.C.C. or indeed on any public authorities in London can take an active and useful part in disentangling the coils of red tape which appear to be restricting unduly a necessary public service.

The Cancer Bill passed its third reading in the House of Commons in the early hours of Wednesday, March 8, having been introduced at 11.32 P.M. after the end of a long debate on foreign affairs. At this third-reading debate an omission was corrected and the bill made applicable to Wales as well as England, and an interesting conflict of views was expressed with regard to the advertising of cancer cures. Mr. Leach moved an amendment to the bill to keep wide open the door of exploration in regard to cancer treatment and cure and gave voice to the anxiety which affects many as to the possible exclusion of "unorthodox" remedies. It was suggested that in closing the door of advertisement to the unorthodox "we may be dooming many to death who might be saved." Another member seconded this amendment as a believer in "nature treatment." Dr. Peters, a doctor of law and not of medicine, told the House that "there are very many people up and down this country who can cure, and have cured, cancer and who are not practitioners"; for years he himself had been healing people of the disease. The amendment was opposed by Dr. Edith Summerskill, and this led to some lively interchanges between her and Mrs. Tate and Lady Astor. Mr. Rhys Davies, winding up for the Labour Party, spoke from his experience of the office of an approved society and said that "we know of tragic cases where faith healing has not meant a cure but has aggravated the condition which could have been saved by medical practitioners." Mr. Walter Elliot spoke against the amendment as Minister of Health, and it was negatived by 122 to 60 at 1.26 A.M.

The Ministry of Health were unwilling to yield on the question of the advertisement of cancer treatment, but have been unable to make the health point of view prevail with the even more important field of prevention of tuberculosis and other milk-borne infections. The pasteurisation of milk appears to have been definitely dropped from the Government's milk programme. The question remains as to how it can be brought back again into political life. Must we wait for a further rise in the figures of tuberculosis or for some large milk-borne epidemic of another disease? Fortunately a number of local authorities are themselves so impressed with the importance of a "safe milk" policy that they are promoting bills to give them local powers of pasteurisation. This is a good move and one in which doctors who are members of local authorities can play a useful part by initiating discussion on the pasteurisation of milk in their local councils and by pressing for the promotion of local legislation. If a number of local authorities press legislation on this matter, then finally the most timid of governments will be obliged to take action on a national scale.

FROM THE PRESS GALLERY

Cancer Bill in the Lords

MOVING the second reading of the Cancer Bill in the House of Lords on March 14 the Duke of DEVONSHIRE, parliamentary under-secretary for the dominions, said that the bill was an administrative measure, primarily intended to promote the diagnosis and treatment of cancer rather than research into its nature and causes. If more money was required for cancer research it could be otherwise provided—for example, by an increased grant to the Medical Research Council. The Imperial Cancer Research Fund and the British Empire Cancer Campaign between them spent £90,000 annually on research, and a clinical cancer research committee had now been formed to investigate the 17,000 new cases of cancer admitted to London hospitals each year. Arrangements were being made to secure adequate records of cases treated under the bill, but its main object was to make available the benefits of knowledge already acquired.

Lord BALFOUR OF BURLEIGH moved an amendment expressing regret that the bill did not contain a provision for increased research into the cause and treatment of cancer. The policy of the Government was, he feared, lop-sided and incomplete. The methods of treatment on which the Government were founding this great experiment were surgery, radium and X rays, and of these the last two were still in their infancy. The current report of the Medical Research Council showed how very tentative the advance was, and how very far they were from having any certainty that even in early stages a cure could be effected. It seemed to him unwise to be contemplating an expenditure of £600,000 or more on treatment which was tentative, when new methods were constantly coming into view that might supersede the methods to which they were now pinning their faith. This great effort towards treatment should be accompanied by a parallel effort with further research, not only into radiotherapeutics, but into the fundamental causes of the disease.

Viscount DAWSON OF PENN welcomed the bill on behalf of the medical profession, but there was in their minds one reserve which had just been eloquently stated by Lord Balfour, who was chairman of the Medical Research Council. Here was a great opportunity for combating the scourge of cancer. Cancer was a disease which discriminated little between one class of the community and another. There had been a definite improvement and increase of knowledge in the treatment of the disease. The bill was justified because it would bring to all classes and conditions of people the advantages of that knowledge. But it was to him almost incomprehensible that a big scheme of this kind for extending the benefits of knowledge to the masses of the people should have been launched without a research scheme at its head, instead of allowing such a scheme, in some few years perhaps, to be affixed to its tail. In a subject like this they needed a research unit at its head to explore new avenues, settle differences of opinion, give light and leading to those centres which were concentrating upon routine, and who were compelled to apply themselves day by day to the patients who sought their advice. Even looking at the matter from an economic point of view the cost of a research unit would be met many times over before two years had passed. He besought the Government to start the movement with a research unit.

Scottish Coal Refuse

In the House of Commons on March 10 the Public Health (Coal Mine Refuse) (Scotland) Bill was read a second time. This measure seeks to amend the Public Health (Scotland) Act, 1897, with respect to coal mine refuse liable to spontaneous combustion. Mr. Mathers, who sponsored the bill on its introduction, explained that its purpose was to bring the law of Scotland in respect of these deposits into line with that of England and Wales.

QUESTION TIME

WEDNESDAY, MARCH 8

Health Services in Kenya Colony

Mr. DAVID ADAMS asked the Secretary of State for the Colonies whether the previous shortage of trained teachers in the education services, and of trained staff in the medical and health services of Kenya Colony had now been fully overcome; and, if not, what steps were being taken to this end.—Mr. MALCOLM MACDONALD replied: Under present economic conditions it is quite out of the question for the Government of Kenya, or of any other African dependency, to provide all the trained medical and educational staff that could usefully be employed, nor do I foresee any possibility of fully meeting requirements until the African himself has been trained to carry out these services among his own people. I hope that Makerere College will help considerably to provide this trained African personnel.

Mr. ADAMS: I take it that the shortage is being gradually overcome?

Mr. MACDONALD: As far as financial considerations permit.

Nutritional Surveys in the Colonial Empire

Mr. MATHERS asked the Secretary of State for the Colonies whether a nutritional survey, such as that which was being carried out in Nyasaland, was contemplated in any other part of the Colonial Empire; and whether it was correct to regard this survey in Nyasaland as the first of a series.—Mr. MALCOLM MACDONALD replied: The answer to both parts of the question is in the affirmative.

Medical and Dental Naval Officers

In reply to a question by Mr. PARKER, Mr. SHAKESPEARE, parliamentary secretary to the Admiralty, stated that among the naval officers who entered the service in the calendar year 1938 there were 35 medical officers (1st appointments) and 15 dental officers (1st appointments). There were also 4 entries of warrant officers into the medical branch.

THURSDAY, MARCH 9

Control of Medical Supplies for Civil Defence

Dr. SUMMERSKILL asked the Minister of Health if arrangements had yet been made in the event of hostilities for the governmental control of medical supplies and distribution to those areas which would be most vulnerable to attack from the air.—Mr. ELLIOT replied: Yes, Sir. Reserves of medical supplies for the treatment of air-raid casualties are being purchased in bulk by the Government and will be distributed for storage, mainly at hospitals, in the area of each scheme-making authority.

Milk Pasteurisation

Mrs. TATE asked the Minister of Health whether he would appoint a royal commission under a chairman of judicial experience to investigate the whole question of pasteurisation of milk in the light both of foreign experience and of statistical material now available, and to hear evidence from all sides.—Mr. ELLIOT replied: I do not think that the appointment of a royal commission on this subject would serve a useful purpose.

Diphtheria Immunisation

Mr. DAVID ADAMS asked the Minister of Health whether, in view of the fact that immunisation was now commonly used in the prevention of diphtheria and that in certain areas this form of treatment was not in general use, he had considered the desirability of issuing a circular to local authorities upon this matter.—Mr. ELLIOT replied: A memorandum on the production of artificial immunity against diphtheria was issued to medical officers of health in 1933. This memorandum is at present being revised with a view to its reissue.

Mr. LEACH asked the Minister of Health whether he would investigate, or request the Medical Research Committee to investigate, the diphtheria records of other countries besides the United States of America and Canada, and particularly those of Sweden and Switzerland, in view

of the fact that diphtheria had practically disappeared from those countries without immunisation.—Mr. ELLIOT replied: I am having such diphtheria records as are available for European countries examined with a view to ascertaining what light they throw on the value of artificial immunisation, and I will communicate the result to the hon. member. As artificial immunisation against diphtheria has been more extensively practised in North America than elsewhere, the records of those countries are clearly the most useful for a study of its effects.

Port Medical Officers: Defective Vessels

Mr. BEN SMITH asked the Minister of Health if he would give particulars of the nuisances and defects in vessels reported by port medical officers of health in respect of the year 1937, showing the number of vessels inspected, the number of British and foreign vessels, respectively, and the number of defects of original construction, structural defects through wear and tear, and cases of dirt, vermin and other conditions prejudicial to health.—Mr. ELLIOT replied: According to the information contained in the annual reports so far received of the medical officers of health of the port health and riparian districts of England and Wales for 1937, and otherwise supplied to me, the following are the particulars desired by the hon. member:—

	British vessels	Foreign vessels
Number of vessels inspected during the year:	66,087	29,865
Defects of original construction ..	2,148	1,845
Structural defects through wear and tear	5,630	2,020
Dirt, vermin, and other conditions prejudicial to health	10,578	2,747

Where a vessel was inspected on more than one occasion during the year it is included a corresponding number of times in the above figures.

Unfit Houses in Rural Districts

Mr. DAY asked the Minister of Health whether he could give particulars, according to the latest estimates, of the number of houses required for rural districts to replace houses at present unfit for human habitation; and what steps were being taken at present to provide more houses for rural workers.—Mr. ELLIOT replied: I estimate that in addition to some 33,000 houses built, building or about to be put in hand by the rural district councils they will need to provide a further 23,000 houses for the replacement of those which are unfit.

Replying to a further question by Mrs. TATE, Mr. ELLIOT said that he had had a series of conferences with local authorities for the purpose of urging them to take full advantage of the subsidies available for houses in rural areas.

Workers' Wages During Sickness

Mr. FLEMING asked the Minister of Health whether he was aware of the ruling of the Court of Appeal that a workman, incapacitated through sickness, was entitled to wages and National Health Insurance benefits for the period of incapacity, unless the workman's employer had properly terminated the contract of service; and whether he intended to take any steps in the matter.—Mr. ELLIOT replied: I am aware of the ruling of the Court of Appeal to which my hon. friend refers. The advice given by my department in the past has been that the liability of the employer to pay wages during incapacity depends upon the contract of employment between him and the employee and that there is no provision in the National Health Insurance Act which either entitles the employer of a person who is receiving sickness benefit to make deductions on that account from wages, or which precludes him from making such deductions in accordance with the terms of the contract of employment. The recent ruling does not call for any change in this advice and I see no reason to take any steps in the matter.

Mr. FLEMING: In view of the widespread practice which is now growing up of employers dismissing employees as soon as they fall ill, will my right hon. friend reconsider his decision and consider the advisability of bringing in an amending bill, or of consulting employers, such as local governing bodies, as to the proper contract to safeguard the interests of employees?

Mr. ELLIOT: I should like to know before I do that that it is an increasing practice. I hope it will not become the practice of the employers in this country.

MONDAY, MARCH 13

Bombing of Chinese Mission Hospital

Mr. WINDSOR asked the Prime Minister if he was aware of the bombing of the Jenkin Robertson hospital of the English Baptist mission by 14 Japanese aeroplanes, when a Chinese nurse was killed and the X-ray department destroyed; whether he had any statement to make; and what action he had taken.—Mr. BUTLER, under-secretary for foreign affairs, replied: This hospital at Sian suffered three direct hits resulting in the total destruction of the operating-theatre, the X-ray department machine-room and two private wards. In addition, much damage was caused to adjoining buildings. These premises were clearly marked with two Union Jacks, one placed on the roof of one of the buildings and one spread out on the ground. One Chinese nurse was killed, but the foreign members of the hospital staff are reported to have escaped unharmed. A strong protest is being made to the Japanese government. The Japanese government are being reminded that the location of this mission's buildings was notified to the Japanese authorities and clear marks affixed in response to their request. The right to claim compensation is being reserved.

Nottingham Hospital and Institution Inquiry

Mr. LYONS asked the Minister of Health whether, and by whom, any investigation had now been carried out with reference to the complaints made concerning the Nottingham City isolation hospital and the Nottingham institution respectively; whether his representative had examined the allegations made in Nottingham; and whether he was now able to say what steps he proposed to take to allay public misgivings in this matter.—Mr. BERNAYS, parliamentary secretary to the Ministry of Health, replied: An investigation into the conditions at the Nottingham isolation hospital and the Nottingham institution has been carried out by a general inspector of my department with the assistance of a nurse inspector. My right hon. friend has considered the inspector's report most carefully and is writing fully to my hon. friend. I am glad to say that no evidence of any kind of infestation of beds, &c., was discovered though it seems accurate that cockroaches are to be found in the City institution and to a certain extent in the isolation hospital. I understand that the Nottingham corporation take steps to deal with these pests, and the officers of my department will continue to keep a watch on conditions in the institutions.

Mr. LYONS asked the Minister of Health what liaison existed in general between each general inspector for the region and the institutions and hospitals of local authorities situate within that region; and, in particular, what regular supervision had been exercised by the regional general inspector of his department over the Nottingham isolation hospital and the city institution, respectively, during the last six months.—Mr. BERNAYS replied: The general inspectors of my department have power to visit and inspect any public assistance institution at any time, but this power does not extend to hospitals and other institutions provided by local authorities under the Public Health Acts. It is the duty of the general inspector to keep himself acquainted with conditions in the public assistance institutions in his district, and for this purpose visits of inspection are paid from time to time. I understand that the general inspector stationed at Nottingham has not visited the Nottingham institution during the last six months during which time, as my hon. and learned friend is aware, there has been heavy pressure on the officers of my department in connexion with civil defence emergency schemes. Several visits have been paid during the last two or three years.

Voluntary Hospitals and Civil Defence

Mr. DUNCAN asked the Minister of Health whether the senior permanent staff, such as the matron and secretary, of voluntary hospitals were to remain in their present

hospitals in the case of an emergency or were to be moved to an outer district with the patients.—Mr. BERNAYS replied: My hon. friend will see from the memorandum recently published on the emergency hospital organisation that in London and certain other centres the hospitals in the inner and outer areas are being grouped with the object of spreading skilled personnel to the best advantage. The distribution of individual members of the staff between the different hospitals is one of the matters which are being worked out on their behalf by the distinguished medical men acting as their group officers whose names, so far as London is concerned, my right hon. friend announced in debate on March 2.

Mr. DUNCAN asked the Minister of Health whether he had completed his negotiations with the London voluntary hospitals regarding structural precautions in case of emergency; and, if so, what were the suggested arrangements.—Mr. BERNAYS replied: The nature of the precautions to be taken has been described in a published memorandum, a copy of which I will send to my hon. friend. Under the financial arrangements which have been agreed with representatives of the voluntary hospitals the Government will pay all of the cost of approved precautions above £1 per bed and 70 per cent. of the first £. Further details of the arrangements are being explained in a circular to the hospitals.

Men Invalided Out of the Air Force

Mr. GARRO-JONES asked the Secretary of State for Air how many men were invalided out of the Royal Air Force in 1937 and 1938; in how many cases was the disability attributed to the service; and to what final appeal had an aggrieved man the right of recourse.—Sir KINGSLEY WOOD replied: 281 men were invalided during 1937 and 316 during 1938: the disability was attributed to service in 53 and 35 cases respectively. An invalided airman who feels himself aggrieved either at the refusal of a pension or at its amount has a right of appeal to the Air Council, and such appeals are always sympathetically considered.

TUESDAY, MARCH 14

African Parrots and Psittacosis

Colonel SANDEMAN ALLEN asked the Minister of Health whether, as psittacosis was a disease unknown among African parrots, he was prepared to take steps to raise the ban on the importation of these birds.—Mr. ELLIOT replied: The information in my possession does not support the assumption that psittacosis is unknown among African parrots and I should not, therefore, feel justified in allowing the unrestricted importation of these birds.

Certification of Blind Persons

Sir WILLIAM JENKINS asked the Minister of Health if he would consider the advisability of giving more licence to oculists in certifying partially sighted pupils at the age of 16.—Mr. ELLIOT replied: I have no power to modify the statutory definition of a blind person for the purposes of the Blind Persons Acts. The criteria, set out in circulars issued to local authorities, for determining whether a person comes within that statutory definition are based on expert ophthalmological advice.

OBITUARY

CUTHBERT HILTON GOLDING-BIRD

M.B. LOND., F.R.C.S.

Mr. C. H. Golding-Bird, consulting surgeon to Guy's Hospital, died on March 6 at the age of 90. For some years he had been living in retirement at Pitfield, Meopham, Kent, though not long ago he used to come occasionally to Guy's to give his opinion on a surgical case, and it is only in the last two years that increasing dyspnœa made him an invalid.

In 1848, when Golding-Bird was born in London, his father, assistant physician to Guy's and a medical prodigy if ever there was one, was at the height of his fame as a consultant, though when he died six years later he was only 40. Golding-Bird was educated at Tonbridge School and King's College, London, taking his B.A. with honours in 1867. He then studied medicine at Guy's, winning gold medals for clinical medicine and surgery and the M.B. gold medal for forensic medicine in 1873. He took his F.R.C.S. in 1874, and after studying for a time in Paris was appointed demonstrator of physiology at Guy's and soon afterwards assistant surgeon. As a teacher first of physiology and later of clinical surgery, and as an examiner at the Royal College of Surgeons, his kindly courtesy and consideration gained him the esteem and affection of students, and he had a natural faculty for inspiring confidence in his patients and colleagues. From 1905 to 1913 Golding-Bird was a member of the council of the Royal College of Surgeons; he was also surgeon to Gravesend Hospital and to the Royal Deaf and Dumb School at Margate, and since his retirement had been chairman of the Kent County Nursing Association and a member of the Central Midwives Board.

[*Elliott and Fry*

Golding-Bird's connexion with Meopham began in 1870 when he married Miss Florence Baber who lived in the village; soon afterwards he bought Pitfield as a holiday home and when he retired enlarged it and lived there permanently. He entered wholeheartedly into the life of the village, founding the local nursing association and becoming a churchwarden. He was a keen antiquarian and published two histories of Meopham for the benefit of charities. His house became something of a museum of the antiques he had collected, and he liked nothing better than to have a few friends to dinner and demonstrate his collection, more especially his clocks. He was always pleased to give a second opinion on any difficult surgical case in the neighbourhood, writes S. A. E. G., and his diagnostic acumen was sometimes uncanny; apart from surgery, too his knowledge was so extensive that it seemed impossible to introduce a subject with which he was not fully acquainted. Mrs. Golding-Bird died in 1919, and they had no children.

PHILIP DYMOCK TURNER

O.B.E., M.D. LOND., M.R.C.P.

Dr. P. D. Turner died at the age of 77 on March 7 at Liss, Hants, where he had lived since he retired from his practice at Ryde, Isle of Wight, some seventeen years ago. He was born in London in 1861 and was educated at Dulwich College and University College, London. He qualified in 1884 and won a gold medal in his London M.D. in 1887. He held house-appointments at University College Hospital, the Brompton Hospital and elsewhere, and also studied in Paris and Berlin. In 1890 he was appointed

physician to the Westminster General Dispensary and in 1896 he took his M.R.C.P. Soon afterwards he went into practice at Ryde, being medical officer to the Royal Isle of Wight County Hospital, and medical officer of health for Ryde. He was an able surgeon and obstetrician, always willing to help a colleague in difficulties. His interests were wide, and his kindly generosity gained him the affection of his fellow medical men and patients alike. During the war he acted as medical officer of the Castle Auxiliary Hospital at Ryde, and he was awarded the O.B.E. for his services.

GEORGE BASIL PRICE

C.M.G., M.D. LOND., F.R.C.P.

THOSE who came in contact with Dr. Basil Price either at the Ministry of Pensions, at Malta during the war, or before that at Livingstone College will feel that they have lost a friend by his death on March 10 at the age of 67.

George Basil Price was the son of Samuel Newell Price and was born at Bristol in 1871. He was educated at Bristol University and St. Bartholomew's Hospital, gaining scholarships and the medical-school gold medal at Bristol and first-class honours in midwifery in the London M.B. in 1896. He took his D.P.H. in 1901 and soon afterwards joined the staff of Livingstone College at Leyton, where for thirteen years he taught the elements of medicine and hygiene to lay missionaries going abroad. Early in the war he joined the R.A.M.C., and in 1915 was sent to Malta and attached to the staff of Imtarfa Military Hospital. Although the administration of an army hospital was new to him he mastered its intricacies with such effect that by 1918 he had been promoted to the rank of lieutenant-colonel and was in command of what had become the most important fever hospital in the island with accommodation for 1700 patients. His duties in Malta were mostly administrative, but he was always ready to make a midnight round with the medical officer and give his opinion on a serious case. For six months he acted as medical consultant to the forces in Malta, and at the end of the war he received the C.M.G. for his services.

[*Elliott and Fry*

After the war Basil Price went to the Ministry of Pensions, where he at first dealt with cases of malaria and dysentery. Later, as consulting medical adviser, his task was to decide the connexion or otherwise of disabilities with war service and assess their degree. In this difficult and sometimes invidious position he earned the respect and affection of all who worked with him or came before him for assessment, and it is safe to say that he had no enemies. He could, however, be wrathful in support of the dignity of the profession or in condemnation of preposterous claims for some nostrum, and this was the more effective as coming from one who was by nature gentle.

Two years ago Basil Price's services with the Ministry of Pensions ended, and since then he had lived in retirement at Parkstone in Dorset. His wife, who survives him, was the daughter of James Garaway and their home was always an attractive social centre.

ARTHUR JOHN COLLIS

M.D. CAMB., D.P.H.

Colonel Collis, who died on March 8 at Clent near Stourbridge at the age of 70, was the son of William Blow Collis of Old Swinford, Worcestershire, and was born there in 1868. He was educated at Stourbridge Grammar School, Leamington College and Selwyn College, Cambridge. He took honours in the natural sciences tripos in 1890 and then went to Guy's, qualifying in 1894. After holding house-appointments in London and Newcastle he took his D.P.H. in 1900 and his M.D. in the following year. He then went into practice at Newcastle; there his specialty was children's diseases, and he was an active member and at one time president of the Newcastle Clinical Society. He was a territorial for many years and commanded a combatant battalion, the Northern Cyclists Battalion, during the war and when it was disbanded served as lieut.-colonel in the R.A.M.C. (T.F.). In 1919 he was appointed medical superintendent of the Ministry of Pensions Hospital at Leicester, and in 1925 he retired and went to live at Clent.

Colonel Collis married Dorothy, daughter of the Rev. H. P. Gurney, late principal of Armstrong (now King's) College, Newcastle, and he leaves a widow and two sons.

"There are two special differences which English experience does not quite decide for us in Australia: (i) the cost of long-distance travelling, necessary in a large country with a sparse population . . . (ii) the difficulties of the outlying and very poor districts, where no contribution would support a medical man. Mr. Ogilvie, in Tasmania, has attempted to solve this difficulty by appointing government medical officers, who are paid a salary of £600, rising to £850 a year, *plus* a house allowance of £50 and a gratuity of £50 a year, paid at the end of three years' service, if their work is satisfactory to the Director of Public Health. By this scheme the doctor is allowed a month's holiday each year, in order to "apply his mind anew to the study of the most modern methods of treatment given under the best conditions." I presume this month's respite would be given even if the medical men were inclined to apply their mind to golf and fishing. Medical attention is free to everyone, at either the practitioner's residence or the patient's home, between 9 A.M. and 7 P.M. on week-days, between 9 A.M. and 12 noon on Saturdays, and not at all on Sundays. The free service extends to maternity cases, but only at approved hospitals. Outside these hours the medical men may charge £1 1*s.* for each visit, and 6*d.* per mile travelling fees; he may charge the same amount for a confinement if it does not eventuate during the prescribed hours. This scheme is the only one I can imagine possible in these out-of-the-way places, which I know well; but it practically means nationalization of the profession if it is extended, and political pressure may easily force the encroachment gradually."—B. KILVINGTON, *Med. J. Aust.*, Dec. 17, 1938, p. 1022.

MEDICAL TOUR TO AMERICA.—In connexion with the New York exhibition the *Bruxelles-Médical* has arranged a medical tour to the United States which will leave Havre on Aug. 29 and will return on Sept. 30. In all six days will be spent in New York, and visits will also be made to Philadelphia, Atlantic City, Washington, Chicago, Detroit, Toronto, the Niagara Falls, and Boston. Further particulars may be had from the travel department of the *Bruxelles-Médical*, 29, Boulevard Adolphe Max, Brussels.

MEDICAL NEWS

Royal College of Surgeons of England

At a meeting of the council of the college held on March 9 with Mr. Hugh Lett, the president, in the chair, the Hallett prize was presented to Dr. A. McK. Large of Toronto.

Mr. F. N. Doubleday was re-elected a member of the board of examiners in dental surgery and Mr. Eardley Holland representative of the college on the Central Midwives Board. Sir James Walton was appointed Bradshaw lecturer and Sir Walter Langdon-Brown Thomas Vicary lecturer for the ensuing year. It was reported that Mr. A. S. Kerr had been appointed to a Streatfeild research scholarship.

A diploma of membership was granted to Dwarkanath Bhargav Kulkarni of Bombay and the London Hospital, and diplomas of fellowship to the following candidates :—

K. D. Fraser, M.B. Lond. ; Mark Tree, M.B. Lond. ; R. A. V. Lewys-Lloyd, M.B. Lond. ; D. W. C. Gawne, M.B. Camb. ; B. W. Smith, M.B. Lond. ; D. A. Andersen, M.B. Lond. ; E. C. Herten-Greaven, M.B. Camb. ; Winifred J. Wadge, M.B. Lond. ; A. M. Desmond, M.B. Lond. ; G. O. Jelly, B.M. Oxfd ; H. S. Sharp, M.B. Camb. ; Fenton Braithwaite, M.B. Camb. ; O. M. Galal, M.B. Birm. ; B. J. Bickford, M.B. Lond. ; D. B. Fraser, B.M. Oxfd ; D. A. Sanford, M.B. Lond. ; E. B. C. Hughes, M.B. Lond. ; M. K. Parikh, M.B. Bombay ; U. C. Chakraborty, M.B. Calcutta ; F. C. Dwyer, M.B. Cape Town ; M. K. El-Sherbini, M.B. Cairo ; D. W. Guthrie, M.B. N.Z. ; E. F. Langley, M.B. Melb. ; James Patrick, M.B. Edin. ; A. A. Shorter, M.B. Sydney ; and R. R. Talbot, M.B. N.Z.

Licences in dental surgery were granted to the following candidates :—

B. D. Bantin, W. K. Batten, M. S. Berman, T. H. Blennerhassett, C. H. Blockley, T. B. Bridges, G. E. Clarke, N. F. Clarke, G. W. Dorr, D. J. Fairweather, Lionel Falconer, E. M. Field, B. E. Greenfield, H. G. Griffith, N. S. Harris, J. L. Hitchman, J. E. Hodgson, W. E. H. Howsam, G. M. Kaye, R. A. E. Keeler, R. W. Kochanek, Eileen M. McRaith, Montagu Malleson, L. G. Morgan, D. L. Power, R. K. Roberts, R. L. Runeckles, E. H. Rushworth, D. H. Shepperd, Albert Southwell, John Symmons, Gerald Tidswell, C. W. Turner, L. A. Wakeford, H. W. Walker-Smith, L. J. Wallace, E. R. Walmsley, and I. C. S. M. Webb.

Diplomas in ophthalmic medicine and surgery were granted, jointly with the Royal College of Physicians, to the following candidates :—

Dorothy A. Barton, M. R. Bhandari, W. L. B. Burns, Frank Clifton, J. K. De Kock, I. G. de Zilva, G. D. Harthan, R. W. Hazelton, B. K. Kapur, V. N. Khanna, V. R. Koppikar, J. P. Kuruvila, W. N. Murray, Krishna Narayan, G. S. P. Noble, P. J. O'Shaughnessy, Sundram Pillai, J. D. Prasad, Anzarul-Islam Quraishi, Monsural Rahman, Rajendra Rohatgi, A. M. Suhail, Zakaria Tahir, R. S. Varma, W. G. Watson, Randal Whittaker, and A. L. Young.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty on March 6, with Dr. John Henderson, the president, in the chair, the following were admitted to the fellowship :—

Theodore Crawford (Glasgow), Tom McEwan (Glasgow), George Lightbody Montgomery (Glasgow), and Lakshman Nandkeolyar (Edinburgh).

University of Manchester

Dr. E. H. Gillespie has been appointed assistant bacteriologist in the routine section of the department of bacteriology.

A book prize has been offered by Mr. Stanley S. Bond, the chairman of Messrs. Butterworth and Co. The prize, which will be known as the Butterworth prize in medicine, will be awarded on the results of the final examination for the degrees of M.B., Ch.B.

Oxford Ophthalmological Congress

The twenty-eighth annual meeting will be held at Keble College from July 5 to 8. Mr. F. A. Williamson-Noble will deliver the Doyne memorial lecture, and he has chosen as his subject ocular consequences of certain chiasmal lesions. Mr. Frank Law and Mr. Keith Lyle will open a discussion on orthoptic training and Mr. Harrison Butler will speak on miners' nystagmus. Papers will also be read by Sir Arnold Lawson, Dr. Bernard Samuels (New York), Mr. P. J. Doyne, and Mr. Basil Graves. Further information may be had from the hon. secretary, Dr. F. A. Anderson, 12, St. John's Hill, Shrewsbury.

Queen's University, Belfast

Dr. Gavin Boyd has been appointed tutor in obstetrics in the university.

National University of Ireland

The degree of M.D. has been granted to Dr. Florance O'Sullivan.

Naval Medical Compassionate Fund

A meeting of the subscribers of this fund will be held at 3.15 P.M. on April 12, at the medical department of the Navy, Admiralty, S.W.1, to elect six directors of the fund.

Course on Disinfestation

The Royal Sanitary Institute is to hold a fortnight's course of instruction in disinfestation work which will begin on Tuesday, May 16. Full particulars can be had from the secretary of the institute, 90, Buckingham Palace Road, London, S.W.1.

British Postgraduate Medical School

On March 28 at 4.30 P.M. Dr. C. M. Hinds Howell will give the first of six lectures on syphilis of the nervous system, and on April 14, at 2.30 P.M., Mr. H. A. T. Fairbank will give the first of three lectures on generalised diseases of bone. Applications for tickets for these lectures should be made to the dean of the school, Ducane Road, London, W.12.

Royal College of Obstetricians and Gynæcologists

The honorary fellowship of the college is to be conferred on Prof. Walter W. Chipman, emeritus professor of obstetrics and gynæcology in the McGill University. The following members of the college have been elected to the fellowship :—

Waring Gerald Cosbie, Canada ; George Stewart Davidson, Aberdeen ; John Emmanuel Reid Heppolette, Lahore ; Alison Mary Hunter, Glasgow ; Thomas Norman Arthur Jeffcoate, Liverpool ; Douglas Hamilton MacLeod, London ; Kenneth McMillan, Birmingham ; Ellen Douglas Morton, Glasgow ; William Charles Wallace Nixon, London ; Nilkanth Anant Purandare, Bombay ; Elaine Margaret Katharine Salmond, London ; William Pelton Tew, Canada ; Beatrice Turner, London ; and Charles Henry Walsh, Liverpool.

Convalescent Home at Tadworth

The country convalescent branch of the Hospital for Sick Children, Great Ormond Street, will not after all have to be closed on account of the heavy expenses involved in rebuilding the London premises. The London County Council has agreed to be responsible for the maintenance of a proportion of the beds for two years. The work will continue under the management of the hospital and a special Tadworth maintenance fund is to be opened to provide for the future of the home.

Postgraduate Courses in Dublin

It is proposed to hold "refresher courses" in clinical surgery and medicine in Dublin from June 19 to 30. Each of the ten teaching hospitals will be at home to post-graduate visitors on one day in each week. The morning sessions will probably be devoted to surgery and the afternoons to demonstrations in clinical medicine. Further information may be had from Mr. William Doolin, P.R.C.S.I., St. Vincent's Hospital, Stephen's Green, Dublin.

German Gynæcological Society

The annual meeting of this society will be held in Berlin from Oct. 18 to 21. Papers will be read on medical care during pregnancy ; miscarriage as a eugenic and economic problem ; early diagnosis of genital carcinoma by means of propaganda and periodic examination ; statistics for cæsarean section in Germany during 1938 ; treatment of placenta prævia with special reference to cæsarean section. Subjects for discussion will include the history of woman and of gynæcology ; vitamins ; and endometrioma. Further information may be had from Prof. H. Fuchs, Staatliche Frauenklinik, Schellmühlerweg 1, Danzig-Langfuhr.

International Congress of Pædiatrics

The fifth International Congress of Pædiatrics will be held in Boston, Massachusetts, on Sept. 3, 4, and 5, 1940. As the programme is soon to be drawn up, suggestions for subjects for general discussion should be submitted to the secretaries of the British national committee (Dr. A. G. Maitland-Jones, 31A, Weymouth Street, London, W.1, and Dr. R. W. B. Ellis, 82, Wimpole Street, W.1) within the next ten days. The programme will include sessions devoted to general discussions and others to the delivery of individual papers.

Glasgow Royal Maternity and Women's Hospital

At the annual meeting of this hospital Prof. T. K. Munro said that during the past year over 9000 women had been attended, fully half in the hospital itself and the remainder in the outdoor department. Among the latter group of 4500 women there was only 1 death. The maternal death-rate among inpatients was 1·4 per cent.; but in nearly a third of the fatal cases the patient was so ill on admission that she died within twenty-four hours. The combined mortality of those treated in their own homes and in hospital was less than 0·75 per cent. The Lord Provost of Glasgow said that he had decided to call a conference to discuss a scheme by which contributions to voluntary hospitals would go into a common pool. Instead of having competing flag-days there would be one hospital week in the city during which all could make their contributions.

Medical Society of London

Mr. Walter Elliot, Minister of Health, was the guest of honour at the 164th anniversary dinner of this society held on March 9 at Claridge's. After Dr. C. E. Lakin, the president, had called on the company to honour the loyal toasts, Mr. Elliot proposed the health of the Society, the members of whom he welcomed as fellow-craftsmen. He spoke of the satisfaction to a Scotsman of living in the capital of the Empire, and especially of being entertained by one of the greatest of its societies. Groups and societies of medical men, he said, were in some ways the very flower of the cities in which they flourished. A peculiar quality of London's societies was their urbanity and their dignity, exemplified by the ritual of the Lord Mayor's ceremonies. That great Londoner, Dr. Samuel Johnson, had said, "He who is tired of London is tired of life, for everything there is in life there is in London." The Medical Society of London proved the truth of that saying. Aged, illustrious, virile, still continuing to attract the cream of medical society, and looking back to its founders who had lived before the French Revolution (when the United States were still nearly as chimerical as the League of Nations), the more it changed the more it remained the same. He fancied that Dr. Lettsom, had he by some kink in the space-time continuum been able to walk into the room, would have found the members of the present day as much his brothers as those of his own time. The medical profession was so old that the religions of the world were mushrooms in comparison. The Minister of Health had never looked in vain to the medical profession, although he had asked of them service after service and was now asking doctors to make the tremendous mental adjustment required to fit them for an emergency organisation.—The President replied, saying that many believed that a medical education fitted a man for any avocation in life; he gave as examples Mr. Walter Elliot and Mr. Claridge, who had been a medical student at St. George's. The society was, he declared, not only the oldest but the best in London; it possessed the spirit of good fellowship and of give-and-take.—Mr. Alexander Simpson-Smith proposed the Visitors, who included the presidents of many medical societies and corporations and the medical heads of the three defence services.—Prof. W. Fletcher Shaw, president of the Royal College of Obstetricians and Gynæcologists, replied. The forefathers of the society were, he said, distinguished for their width of education and culture, their broad outlook on life and their interest in everything connected with medicine and in many things outside it. In the case of his own corporation he recognised the valuable experience gained from initial opposition and criticism; he hoped that it might lay such foundations of tradition that the men who came after would be able to build upon them an enduring edifice.

Royal Society of Medicine

The house and library of this society will be closed for Easter from April 7 to April 10. On April 6 and 11 the library will be closed at 6.30 P.M.

Central Midwives Board

The report of this board for the year ended March 31, 1938, which has just been published, shows that at the end of the year there were 67,089 women on the Midwives Roll, an increase of 2043 on the total for the previous year. Of these, however, only 17,494 were actually practising midwifery. The number of candidates for the midwifery examination was 4420—the highest number recorded—and three out of every four were successful. Reference is made in the report to the removal from the Midwives Roll of the names of 1164 midwives who surrendered their certificates to local supervising authorities under the provisions of the Midwives Act, 1936.

Committee on Medical Aspects of Flying

The Secretary of State for Air, Sir Kingsley Wood, on the recommendation of the director of medical services of the Royal Air Force, has appointed a standing committee to investigate and advise him on the medical aspects of all matters concerning personnel which might affect safety and efficiency in flying. The committee will be constituted as follows: Sir Edward Mellanby, F.R.C.P., F.R.S. (chairman); Prof. F. C. Bartlett, F.R.S.; Dr. E. A. Carmichael; Mr. C. S. Hallpike, F.R.C.S.; Mr. B. H. C. Matthews, Sc.D.; Sir John Parsons, F.R.C.S., F.R.S.; Prof. L. J. Witts, F.R.C.P.; Air Vice-Marshal A. V. J. Richardson, M.B. (director of medical services), and Air-Commodore H. E. Whittingham, F.R.C.P.E.

Westminster Hospital

King Edward's Hospital Fund has offered to make a special grant of £15,000 towards the £100,000 required to open this hospital free of debt, on condition that the balance is raised by April 20, the day when the King, accompanied by the Queen, will open the new buildings. About £10,000 has already been raised.

THE LANCET 100 YEARS AGO

March 16, 1839, *p.* 902.

From a pamphlet entitled "A Letter to the Lord Chancellor on the present State of the Law of Lunacy" by A Barrister of the Inner Temple.

. . . To remedy such errors as this, the author proposes that "Instead of the power being vested, as it now is, in the hands of any two physicians, surgeons, or apothecaries, no person whomsoever should be confined in any mad-house, lunatic hospital, or licensed asylum, until an inquest of twelve men had first determined upon the fact, whether the individual was sane or not; it would then become a matter of proof to be supported as well by the evidence of medical men, as also by that of the friends of the unfortunate sufferer (the latter being frequently, from their connection, the better judges, whether the subject of inquiry ought to be under any actual restraint); counsel if required, on either side, should be permitted to attend; and the supposed lunatic, if not in a dangerous state, should always appear before the inquest; if, however, it would be imprudent to produce the lunatic from any ill consequence which might attend the violence of the malady, it ought then be compulsory on two medical men, or one medical man and two other persons, to testify such facts upon oath.

"This trial by jury might be very easily carried into effect throughout the country, by constituting as judge upon every such inquiry, the Coroner of the county, division, or jurisdiction, within which the lunatic might happen to reside, or to have been taken charge of by the parish officer.

"Independently of the protection which this trial by jury would afford to personal liberty, there is another cogent reason why it should be carried into effect. It is, that too heavy a responsibility is at present thrown upon the medical profession. . . ."

Appointments

BARSBY, BERYL E., M.B. Lond., resident medical assistant and clinical pathologist at the Hospital for Sick Children, Great Ormond Street.

BREMER, J. K., M.B. Cape Town, F.R.C.S., resident surgical officer at the Walsall General Hospital.

DICKIE, G. G., M.B. Aberd., D.P.H., assistant medical officer of health for Barrow-in-Furness.

FLACKS, BENJAMIN, M.B. Manc., resident medical officer at the City General Hospital, Leicester.

HIGGINSON, A. B., M.B. Lpool, third assistant medical officer at Shenley Hospital, Middlesex.

KINSTRIE, W. H., M.B. Edin., D.P.H., medical assistant to the medical officer of health for Kingston-upon-Thames.

LUXTON, R. W., M.D. Manc., M.R.C.P., hon. physician to the Christie Hospital, Manchester.

MACKECHNIE, D. M., M.B. Glasg., senior school medical officer and senior assistant medical officer of health for Stoke-on-Trent.

MCKISSOCK, WYLIE, M.S. Lond., F.R.C.S., associate neurological surgeon to St. George's Hospital, London.

*MILL, W. A., M.S. Lond., F.R.C.S., surgeon to the ear, nose, and throat department at St. Thomas's Hospital, London.

MILLAR, W. G., M.B. Edin., pathologist and director of the clinical research laboratory at the Victoria Infirmary, Glasgow.

*NEILSON, D. F. A., B.A. Camb., F.R.C.S., surgeon to the ear, nose, and throat department at St. Thomas's Hospital, London.

NUTT, A. B., M.B. Lond., hon. ophthalmic surgeon to the Children's Hospital, Sheffield.

PARKER, G. E., M.B. Camb., F.R.C.S., hon. assistant surgeon to the Woolwich and District War Memorial Hospital.

PEACOCK, ROYDON, B.Chir. Camb., F.R.C.S., assistant surgeon to the ear, nose, and throat department of St. George's Hospital, London.

PEARSON, J. E. G., B.M. Oxfd, M.R.C.P., hon. physician to the Connaught Hospital, London.

TOWNSEND, ERIC, M.D. Edin., D.P.H., assistant medical officer of health for Bournemouth.

VARTAN, C. K., F.R.C.S., M.R.C.O.G., hon. assistant obstetric surgeon to the Woolwich and District War Memorial Hospital.

Colonial Service.—The following appointments are announced:

SMITH, H. W., M.R.C.S., medical officer, West Africa;
RIGBY, E. P., M.B. Lond., medical officer, Kenya;
MURCOTT, E. H., M.B. Edin., medical officer, Kenya;
COOKE, E. R. N., M.B. Dubl., medical officer, Kenya;
VILAIN, P. W., M.B. Lond., D.T.M. & H., D.P.H., medical officer of health, Trinidad;
LEE, H. B., M.B. Melb., D.T.M. & H., senior specialist, medical department, Nigeria;
FITZMAURICE, H. G., L.R.C.P.E., senior medical officer, Nyasaland; and
MACKIE, J. B., M.B. Edin., D.P.H., D.T.M., malariologist, medical department, Hong-Kong.

* Subject to confirmation.

Medical Diary

March 20 to March 26

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1.
MONDAY.
United Services. 4.30 P.M., Dr. C. A. Green: Ætiology of Acute Rheumatism.
TUESDAY.—5.30 P.M., general meeting of fellows.
Pathology. 8.15 P.M., Dr. F. Duran-Jordá (head of the Spanish Republican Army Transfusion Service): The Preservation of Blood for Transfusion. Dr. Dorothy Russell and Mr. D. W. C. Northfield: False Diverticulum of a Lateral Ventricle causing Hemiplegia in Chronic Internal Hydrocephalus. Dr. S. D. Elliott: Bacteræmia following Tonsillectomy.
WEDNESDAY.
Comparative Medicine. 5 P.M., Miss A. W. Greener and Prof. F. C. Minett, D.Sc.: Anthrax in Mink. Prof. J. J. Wright, F.R.C.V.S.: Nembutal Anæsthesia in the Pig. Mr. R. Lovell, Ph.D.: Isolation of a Pasteurella from a Sample of Udder Secretion.
THURSDAY.
Urology. 8.30 P.M., Mr. A. Ralph Thompson: Secondary Diseases of the Kidneys. Dr. M. D. Nosworthy: Anæsthetic Problems in Urology.
FRIDAY.
Disease in Children. 5 P.M. (cases at 4.15 P.M.), Prof. Robert Debré (Paris): Familial Hepatitis and Chronic Jaundice.
Epidemiology and State Medicine. 8.15 P.M., Dr. E. R. Cullinan: The Epidemiology of Jaundice.

HUNTERIAN SOCIETY.
MONDAY.—8.30 P.M. (Simpson's Restaurant, Bird-in-Hand Court, 78, Cheapside, E.C.), Lord Horder and Mr. W. H. Ogilvie: Misleading Leading Symptoms.

CHELSEA CLINICAL SOCIETY.
TUESDAY.—8.30 P.M. (Rembrandt Hotel, Thurloe Place, S.W.7), Mr. E. Carew-Shaw and Mr. C. Hamblen-Thomas: The Medical Treatment of Sinusitis.

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS.
FRIDAY.—5.30 P.M. (London School of Hygiene, Keppel Street, W.C.1), business meeting. 6 P.M., Sir Owen Williams and Colonel A. W. Garrett: Factory Construction and Health.

MEDICO-LEGAL SOCIETY.
THURSDAY.—8.30 P.M. (26, Portland Place, W.1), Dr. Gerald Slot, Colonel Walter Parkes, and Captain G. M. Eden: The Street Accident.

EUGENICS SOCIETY.
TUESDAY.—5.15 P.M. (rooms of the Royal Society, Burlington House, Piccadilly, W.1), Mr. F. Lafitte: The Work of the Population Policies Committee.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1.
TUESDAY and THURSDAY.—5 P.M., Prof. J. A. Gunn: The Pharmacological Actions and Therapeutic Uses of Some Compounds Related to Adrenaline. (Oliver-Sharpey lectures.)

UNIVERSITY OF LONDON.
MONDAY.—5 P.M. (St. Thomas's Hospital, S.E.1), Dr. W. E. Gye, F.R.S.: The Present Position of the Cancer Problem.

UNIVERSITY OF BIRMINGHAM.
TUESDAY and THURSDAY.—4 P.M., Dr. Peyton Rous (New York): Present Aspects of the Cancer Problem. (William Withering lectures.)

UNIVERSITY OF GLASGOW.
TUESDAY.—4.30 P.M. (Tennent Memorial Building, Church Street), Dr. John Marshall: The Eye in the Specific Infectious Diseases.

TAVISTOCK CLINIC, Malet Place, W.C.1.
MONDAY.—4.30 P.M., Dr. H. Crichton-Miller: Self and Racial Evolution.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12.
MONDAY.—5.30 P.M., Mr. C. H. Frankau: Injuries of the Upper Limb and General Principles in the Treatment of Joint Injuries.
TUESDAY.—4.30 P.M., Dr. S. Levy Simpson: Diseases of Endocrine Glands. 5.30 P.M., Mr. P. H. Mitchiner: Injuries to Nerves and Vessels.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 2 P.M., Dr. J. D. MacLennan: The Bacteriological Diagnosis of Diphtheria. 3 P.M., clinical and pathological conference (surgical). 4.30 P.M., Prof. E. C. Dodds: Hormones in Relation to Medicine and Pathology. 5.30 P.M., Mr. C. Max Page: Amputations.
THURSDAY.—2.15 P.M., Dr. Duncan White: radiological conference. 3.30 P.M., Dr. P. M. F. Bishop: Amenorrhœa. 5.30 P.M., Mr. G. Jefferson: Head Injuries.
FRIDAY.—2 P.M., clinical and pathological conference (obstetrics and gynæcology). 2.30 P.M., Mr. Stanford Cade: Radium. 5.30 P.M., Dr. A. E. Tudor Hart: Recent Experience in the War in Spain.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES, W.9.
THURSDAY.—3 P.M., Dr. Redvers Ironside: clinical demonstration.

ST. GEORGE'S HOSPITAL, S.W.1.
THURSDAY—5 P.M., psychiatric demonstration.

NATIONAL HOSPITAL, Queen Square, W.C.1.
MONDAY.—3.30 P.M., Dr. C. P. Symonds: Cerebral Tumours (2).
TUESDAY.—3.30 P.M., Dr. Purdon Martin: Acute Infective Diseases of the Brain.
WEDNESDAY.—3.30 P.M., Dr. F. M. R. Walshe: clinical demonstration.
THURSDAY.—3.30 P.M., Dr. Denis Brinton: Vascular Disease of Central Nervous System (2).
FRIDAY.—3.30 P.M., Mr. F. A. Williamson-Noble: Papilloedema.
Outpatient clinic daily at 2 P.M.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.
THURSDAY.—2 P.M., Dr. Ruby Stern: Forms of Meningitis and Their Treatment. 3 P.M., Dr. R. Bonham-Carter: Gastro-enteritis in Infants.
Outpatient clinics daily at 10 A.M. and ward visits at 2 P.M.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.3.
WEDNESDAY.—4 P.M., Mr. O. V. Lloyd-Davies: Common Rectal Symptoms and Diagnosis.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn Road, W.C.1.
FRIDAY.—4 P.M., Mr. W. A. Mill: Earache in the Normal Ear.

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, Ranelagh Road, S.W.1.
FRIDAY.—3.30 P.M., Drs. A. T. M. Wilson, E. Wittkower, and S. D. Mitchell: The Psychological Aspects of the Rheumatic Diseases.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.
MONDAY to SUNDAY.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.1, afternoon course in neurology.—CHELSEA HOSPITAL FOR WOMEN, Arthur Street,

S.W.3, all-day course in gynæcology.—ROYAL EYE HOSPITAL, St. George's Circus, S.E.1, afternoon course in ophthalmology.—BROMPTON HOSPITAL, S.W.3, 5.15 P.M., twice weekly, M.R.C.P. course in chest diseases.—MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1, Mon., Wed., and Fri, 5.15 P.M., Primary F.R.C.S. physiology course.—ROYAL CHEST HOSPITAL, City Road, E.C.1, Mon., Wed., and Fri., 8 P.M., M.R.C.P. course in chest and heart diseases. (Open to non-members.)—BRITISH LEGION HEADQUARTERS, 25, Eccleston Square, S.W.1, Thurs., 8.30 P.M., lecture on bronchiectasis.—PARK HOSPITAL, Hither Green, S.E.13, Sat. and Sun. course in fevers.—UNIVERSITY COLLEGE, Gower Street, W.C.1, Fri., 8.30 P.M., Mr. Somerville Hastings and Dr. D. Stark Murray, Sir Henry Brackenbury and Dr. Frank Gray: That the Institution of a Whole-time State Medical Service would be in the Interests of the Nations' Health.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley Road, S.W.12.
WEDNESDAY.—4 P.M., Dr. L. Colebrook: The Chemotherapeutic Treatment of Streptococcal Infections.

MANCHESTER ROYAL INFIRMARY.
FRIDAY.—4.15 P.M., Dr. Norman Kletz: medical cases.

LEEDS GENERAL INFIRMARY.
TUESDAY.—3.30 P.M., Dr. H. H. Moll: Hay-fever and Other Minor Allergic Diseases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY.—4.15 P.M. (Lock Hospital, 41, Rottenrow), Dr. David Watson: Venereal Disease in Women.

Vacancies

For further information refer to the advertisement columns

Argyll and Bute District Mental Hosp.—Asst. M.O., £400.
*Barley Mow Welfare Centre, Frazier Street, S.E.*1.—M.O., 1½ guineas per session.
Bath, Royal United Hosp.—H.S., at rate of £150.
Bedford County Hosp.—Sen. H.S., and Cas. O., each at rate of £150.
*Belgrave Hosp. for Women, Clapham Road, S.W.*9.—Two H.P.'s, and H.S., each at rate of £100.
Birmingham, Monyhull Colony.—Res. A.M.O., £350.
Blackburn Royal Infirmary.—Res. surg. O., £250.
Bradford, Municipal General Hosp., St. Luke's.—Med. supt., £1100.
Bradford City.—Asst. school M.O., £500.
Bradford Royal Infirmary.—Two H.P.'s and five H.S.'s, each at rate of £150.
Brighton, Borough Infectious Disease Hosp., &c.—Sen. res. M.O., £450.
Cambridge, Addenbrooke's Hosp.—H.P., at rate of £130. Also hon. surgeon.
Coventry and Warwickshire Hosp.—Radiographer, £300. Also H.S., at rate of £150.
Devon Mental Hosp.—Jun. asst. M.O., £350.
Doncaster County Borough Council.—Consultant obstetrician and gynecologist, £775.
Doncaster Royal Infirmary.—Res. surg. O., and orthopædic H.S., at rate of £250 and £150 respectively.
Durham County Council.—Temp. asst. M.O.H., £600.
*East End Maternity Hosp., 396, Commercial Road, E.*1.—Res. M.O., at rate of £150.
Edgware, Middlesex, Redhill County Hosp.—Cas. M.O., £350. Also two jun. asst. M.O.'s, each at rate of £250.
Epsom County Hosp.—Res. asst. M.O., at rate of £250.
*Evelina Hosp. for Sick Children, Southwark, S.E.*1.—H.S., at rate of £120.
Exeter, Princess Elizabeth Orthopædic Hosp.—Res. H.S., at rate of £150.
Exeter City Mental Hosp.—Med. supt., £750. Also asst. M.O., £400.
*General Post Office, E.C.*1.—M.O.'s for Cable Ships, 1 guinea per day.
Hong Kong University.—Chair of Pathology, £1000–£25–£1250.
*Hosp. for Sick Children, Great Ormond Street, W.C.*1.—Two H.P.'s and two H.S.'s, each at rate of £50.
*Hosp. of St. John and St. Elizabeth, 60, Grove End Road, N.W.*8. Res. H.S., at rate of £75.
*Hostel of St. Luke, 14, Fitzroy Square, W.*1.—Res. M.O., at rate of £200.
Hull Royal Infirmary.—Second H.S., at rate of £150.
Indian Medical Service.—European officers.
Isleworth, South Middlesex Fever Hosp.—Asst. res. M.O., £250.
Kensington Royal Borough.—Temp. asst. M.O. for air-raid work, £500.
Leicester Royal Infirmary.—Radiotherapeutist, £500. Also hon. asst. surgeon, 100 guineas.
Liverpool, Broadgreen Sanatorium.—Res. asst. M.O., £250.
Liverpool, Fazakerley Isolation Hosp.—Res. asst. M.O., £250.
Liverpool Heart Hosp., 34, Oxford Street.—H.P., at rate of £100.
*London Chest Hosp., Victoria Park, E.*2.—H.P., at rate of £100. Also physician to inpatients.
London County Council.—Part-time radiologist, £350, &c. Part-time M.O., £300. Also temp. asst. aurist, 34s. 6d. a session.
Maidstone, Kent County Mental Hosp.—Second asst. M.O., £350.
Manchester Ear Hosp., Grosvenor Square.—H.S., at rate of £150.
Manchester Northern Hosp., Cheetham Hill Road.—Res. surg. O., at rate of £200.
Manchester Royal Children's Hosp., Pendlebury.—Asst. M.O. to outpatients' dept., at rate of £150.
*Metropolitan Hosp., Kingsland Road, E.*8.—Sen. and jun. H.P.'s and H.S.'s, each at rate of £100.
*National Hosp. for Diseases of the Heart, Westmoreland Street, W.*1.—Res. M.O., and outpatient M.O., at rate of £150 and £125 respectively.
Newport, Mon., Royal Gwent, Hosp.—Appointments, at rate of £200–£150.
North Riding of Yorkshire County Council, &c.—M.O.H. and asst. to county M.O.H., £800.
Norwich City.—Asst. M.O.H. and asst. school M.O., &c., £600.
Oldbury Borough.—Asst. M.O.H., £600.
*Paddington Green Children's Hosp., W.*2.—H.P., and H.S., each at rate of £150.
*Poplar Hosp., East India Dock Road, E.*14.—Second res. officer, at rate of £175.
Preston, Sharoe Green Hosp.—Jun. asst. res. M.O., at rate of £100.
Rochdale Infirmary and Dispensary.—Cas. H.S., £150.
Rotherham County Borough.—Temporary asst. M.O., £600.
Royal Air Force.—Commissions.
*Royal Cancer Hosp., Fulham Road, S.W.*3.—Res. H.S. to radium dept., at rate of £100.
*Royal Eye Hosp., St. George's Circus, S.E.*1.—Refractionist to L.C.C. children's dept., and clin. asst., £80 and £40 respectively.
Royal Naval Medical Service.—M.O.'s.
*Royal Waterloo Hosp. for Children and Women, Waterloo Road, S.E.*1.—Hon. surg. reg., hon. med. reg., and hon. gynæcological reg.
St. Albans and Mid Herts Hosp.—Res. M.O., £150.
*St. Bartholomew's Hosp., E.C.*1.—Hon. instructor for speech defects, &c.
*St. John's Hosp., Lewisham, S.E.*13.—Res. surg. O., £200.
*St. John's Hosp. for Diseases of the Skin, 5, Lisle Street, W.C.*2. Hon. physician.
Salford Royal Hosp.—Hon. asst. neurological surgeon.
Smethwick, St. Chad's Hosp.—H.P. and anæsthetist, at rate of £150.
*South London Hosp. for Women, Clapham Common, S.W.*4.—Clin. asst. to gynecological outpatients.
Southend Municipal Hosp.—Asst. M.O., £325.
Southend-on-Sea General Hosp.—Res. obstet. officer, at rate of £100.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. to orthopædic dept., at rate of £150.
Swanley, Kent, Hosp. Convalescent Home, Parkwood.—Res. M.O., at rate of £200.
Swansea General and Eye Hosp.—Cas. O., at rate of £150 to £175.
*Victoria Hosp. for Children, Tite Street, Chelsea, S.W.*3.—Ophth. surgeon and second orthopædic surgeon. Also cas. O., at rate of £200.
Wakefield, Clayton Hosp.—H.S., at rate of £175.
Wakefield Mental Hosp.—Asst. M.O., £350.
West Bromwich, Hallam Hosp.—Two asst. M.O.'s, each at rate of £200.
*West London Hosp., Hammersmith, W.*6.—Res. cas. O., at rate of £100. Also asst. physician.
*Willesden General Hosp., Harlesden Road, N.W.*10.—Res. officer, at rate of £100.
*Woolwich and District War Memorial Hosp., Shooters Hill, S.E.*18. Res. med. reg. and res. pathologist, at rate of £150.

Births, Marriages and Deaths

BIRTHS

HILL.—On March 8, at Bath, the wife of Dr. Leslie Charles Hill—a daughter.

LORD.—On March 8, at Bournemouth, the wife of Dr. S. L. Lord, of Hamworthy, Dorset—a son.

ROUTH.—On March 11, at Exeter, the wife of Dr. Douglas J. L. Routh, of Okehampton—a daughter (prematurely).

SODDY.—On March 9, at Devonshire Place, W.1, the wife of Dr. Kenneth Soddy—a son.

VINCENZI.—On March 9, at Ipswich, the wife of Dr. Julius Vincenzi, of Earl Soham—a son.

MARRIAGES

CADAS—LITTLEWOOD.—On March 9, at St. Peter's Church, Croft-on-Tees, John Borland Cadas, M.B. Glasg., to Sybil Mary Littlewood.

DEATHS

CLARK.—On March 11, at Northwood, Middlesex, Charles Alexander Clark, L.D.S., late of Weymouth Street, W.1, aged 78.

COLLIS.—On March 8, at Stourbridge, Worcs, Arthur John Collis, M.D. Camb., T.D., aged 70.

CULHANE.—On Feb. 14, at sea, Major A. J. Culhane, M.B. N.U.I., I.M.S.

PRICE.—On March 10, George Basil Price, lieut.-col., C.M.G., M.D. Lond., F.R.C.P., of Parkstone, Dorset, aged 67.

SHAW.—On March 9, at Clifton, John Edward Shaw, M.B. Edin., aged 90.

TURNER.—On March 7, at Liss, Hants, Philip Dymock Turner, O.B.E., M.D. Lond., aged 77.

WHELAN.—On March 5, at Shrewsbury, Lawder Thomas Whelan, F.R.C.S.I., major, R.A.M.C. (retd.).

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

PROTECTION OF INFANTS AGAINST GAS

A PROTECTIVE helmet for babies was demonstrated by officials from the Home Office on Monday last in London. It is designed to protect infants from birth up to the time when the child can wear a respirator —which is normally about two years of age—but it can be used for children up to four or five. It consists of a hood of impervious fabric with a large window of non-inflammable cellulose acetate. The hood encloses the head, shoulders and arms and is closed round the waist with a draw tape. The hood is fastened inside a light metal frame which is lengthened on the underside with an adjustable tail-piece, so as to form a support and protection for the child's back. The tail-piece is turned up at the end to form a seat. The infant is secured in the helmet by means of a T-shaped supporting strap connected to the end of the tail-piece. The frame and strap are adjustable to fit different sizes of children. The hood is padded on the underside. Air is supplied to the inside of the hood by means of a rubber bellows of a concertina type. The air passes through a filter and enters the hood through an orifice which deflects the air upwards away from the baby's head.

It is stated that a steady rate of pumping of about 40 strokes per minute is adequate to keep out gas and to supply sufficient air. The space in the hood is large enough to allow pumping to be stopped for some minutes. There is said to be no limit to the time during which a child may remain in the helmet if the steady pumping is carried out. At the demonstration two infants, aged three weeks and eight weeks, were placed in helmets with no difficulty and appeared to be unaffected by the experience. They were not taken into a concentration of gas, but it was stated that this had many times been done.

From the physiological standpoint the helmet seems to be practical and well thought-out. It weighs about 6 lb. and is fairly easily carried by the mother. The children shown in the helmet were certainly quite comfortable. Older children are often not so placid, but it was claimed that even the most excitable and fractious child could come to no harm in the device, and that temperature and humidity inside had been carefully checked and found to be satisfactory. It seems likely that this is so, at least from the purely physical point of view. What the psychological results of enclosing a violently protesting child in such a helmet might be is another and different matter. The psychological objection to the hood would, however, probably be shared by any device capable of protecting a child against gas.

It was stated that 1¼ million of these helmets have been ordered, and that distribution will begin fairly shortly. Distribution is to be done principally by the use of the facilities available in maternity and child-welfare work.

THE STORAGE OF EGGS

THE habits of the hen are such that the supply of eggs is at a maximum in April and a minimum in November, and the prices vary in inverse ratio to the supply. If cheap eggs are to be available when they are most needed they must therefore be stored for over six months. The cold storage of eggs has not been much practised in this country of recent years, though a large trade in stored eggs is done in the United States, but there are now indications of a renewed interest in egg storage over here. The advantages and disadvantages of cold storage and gas storage are set out by Mr. T. Moran, D.Sc., in a free pamphlet issued by the Department of Scientific and Industrial Research. He does not deal with the "pickling" processes, either with water-glass or the more modern organic sealing solutions, presumably because these are unsuitable for large-scale use. From the time of laying the egg begins to change, more especially if it has been fertilised. Hence unfertilised eggs are preferred for storage. Even so, and assuming that bacteria and moulds do not pierce the shell and its membranes, eggs stored in a dry atmosphere will dry and contain a larger air-space, whilst the white may shrink and liquefy, the yolk membrane and the yolk itself weaken, and a slight but unpleasant metallic taste develop. Eggs, like milk, also tend to take up tastes and odours from their surroundings. These defects, apart from rendering eggs unpalatable, may affect their physical behaviour when boiled or poached. Cold storage at 29°–32° F., with control of humidity only, allows increase of the air-cell and yellowing of the white; the yolk becomes flabby, and a storage taste develops which shows up particularly in boiled eggs. It is, nevertheless, satisfactory for storage not exceeding five months—not long enough for a satisfactory carry-over from April to November. Partial gas storage, in an atmosphere containing 2–2½ per cent. of carbon dioxide, with control of humidity, is more satisfactory. After nine months the yolk is firm and there is no storage taste, but the white still becomes rather yellow and the air-cell is large. Full gas storage with 60–100 per cent. of carbon dioxide and no control of humidity prevents enlargement of the air-cell, since the atmosphere is saturated with moisture and the egg cannot dry up, but the thin part of the white is watery and the thick part considerably shrunken. Both gas-storage methods, presumably because of condensation on the shell of water containing a relatively high concentration of carbon dioxide and because of solution and re-deposition of calcium carbonate, cause some roughening of the shell. Ozone, up to one part in a million, slightly delays the appearance of storage taste in the yolk but higher amounts tend to produce a metallic or cucumber taste. For most purposes eggs stored by these methods for nine months or even longer should be above reproach, but the person of critical taste will probably still prefer his boiled or poached egg to be new laid.

THE MEDICAL CURRICULUM IN GERMANY

LAST week the president of the Royal College of Physicians, speaking unofficially, quoted the old saying "you can't get the terriers too soon to the rats." The new scheme for medical education in Germany announced in our issue of Jan. 14 (p. 103) seems to be giving it practical application. From further particulars now available (*Med. Klinik*, Jan. 27, 1939, p. 132) it seems that the course of the German student is really to be shortened by some two years, for not only is the time of study reduced from 11 to 10 half-years but the year's practical work, formerly done at the end of the course, is now to be included in this period. The time occupied by the final examination is also to be reduced. But if the student has less time he has more to do; for subjects which were formerly optional have now been made compulsory—notably eugenics, radiology, nature-cure methods, and occupational diseases. The student must also spend six weeks in agricultural or factory service "so that he may gain practical experience of living with people in other occupations and under other social and working conditions which will be of great value to him later as doctor." It is stated that these changes aim at giving the young doctor an earlier financial independence. According to the *Manchester Guardian's* Berlin correspondent (March 11) compulsory military and labour service occupy over 2½ years and the medical graduate has often been nearly 30 before he could earn his living. Figures quoted in the *Münchener Medizinische Wochenschrift* (March 10, 1939, p. 391) suggest that there may be other considerations which are at least as pressing as the wish to give the doctor an earlier professional start. In Prussia for the year 1931–32 there were 2910 candidates for the premedical examination, but in 1936–37 the number had fallen to 1590.

GRANCHER OR B.C.G.?

IN *Nordisk Medicin* for Jan. 7 (p. 59) Dr. Teofilip Nyrén compares the results obtained in Sweden by the Grancher system of transferring children from tuberculous homes to healthy foster homes with those of B.C.G. vaccination. Between 1915 and 1937, the Swedish National Association against Tuberculosis was helped to board out 3297 tuberculosis-threatened children under the age of two years in healthy foster homes, and Nyrén has now obtained information as to the fate of 3013 of them. He found that the earlier in life the children were removed from tuberculous homes the better was the prognosis. Of the 290 children known to have died, 120 had died of tuberculosis. Of 272 infants who had been removed from infection directly after birth and who had not been exposed to contact with tuberculous cases during the first two years of life, 21 had died, including 3 from tuberculosis, and 11 others showed signs of tuberculosis. Turning to the rival system of B.C.G. vaccination practised in the north of Sweden under the auspices of the Swedish National Association since 1927, and in Gothenburg under the direction of Prof. Wallgren, also since 1927, Nyrén finds that the results of B.C.G. vaccination are on the whole better. He thinks, however, that when a child is found to be already tuberculin-positive, the Grancher system is to be preferred. But new-born infants and children from tuberculous homes and with a negative tuberculin reaction several weeks after birth should, in his opinion, be given the benefits of B.C.G. vaccination by the intracutaneous route, followed by isolation from any infectious case of tuberculosis till they have become tuberculin-positive. For not only is the B.C.G. system the more humane of the two, but it also is a guarantee, to a certain extent, against infection from unknown cases of tuberculosis—a guarantee which the Grancher system cannot always give.

SEX IN ADOLESCENCE

SMALL books on sex for the young are now so numerous that there can be little reason why anyone should grow up either ignorant or misinformed about this subject. Prof. Corner's [1] is as good as most, being quite free from sentimentality if perhaps a trifle earnest in its manner of presentation. According to Dr. Corner sex has presumably arisen in order that all living creatures (except the lowest forms of life) should have more than one line of ancestry. He supplies short chapters on the human reproductive system, sex attraction, attainment of maturity, sex in girls, sex conduct and sex disorders. Thus the subject is approached both from the biological and the ethical standpoint, but the author, although he is a recognised authority on parts of his subject, does not probe too deeply into any one section of it, being content with a short and simple pronouncement on each point that arises. Sublimation of the sex impulse during adolescence is, he thinks, to be achieved by hard work and exercise, but it is open to doubt whether the traditional advice to "put on a couple of sweaters and take the dog for a run" is always a complete answer to the individual problem. A list of books and materials for further study of the subject is appended.

STANDARDISATION OF HÆMOGLOBINOMETERS

THE committee of the British Standards Institution which prepared the British standard specification for hæmacytometer counting chambers and hæmacytometer dilution pipettes has now prepared a draft British standard specification for hæmoglobinometers. The draft specification has two notable features: firstly it provides a definite colorimetric basis for the standard colour tubes, and secondly it ensures that any graduated hæmoglobinometer tube complying with the specification may be used with any colour tube complying with the specification.

The institution is now circulating copies of this draft specification for comment, and hopes that the draft will receive the widest possible consideration so that the specification when finally published may command the maximum measure of agreement. A copy of the draft specification may be had, post free, from the director, British Standards Institution, 28, Victoria Street, London, S.W.1, to whom also suggestions for amendments should be sent. All comments submitted will receive careful consideration when the draft is being revised for publication.

A VARIETY OF EXPERIENCE

IT must be given to few doctors to have enjoyed the variety of experience, professional and otherwise, which has fallen to Dr. Dickie's lot. Born in Aberdeen, the son of a distinguished man of science, he began early to feel the itch to write and if his style is epistolary rather than literary there is no lack of interesting material in his latest book.[1] Country readers will envy him the opportunities of first-class fishing and shooting which have come his way, and will be anxious to try his tip for starting a jibbing horse. Others, perhaps, will be more absorbed in his experiences as general practitioner, Indian railway doctor, commandant of the Star and Garter Hospital, or as film-actor. Less enviable must have been his sensations during the great Indian earthquake of 1897; when called upon to deal with an elephant with a carbuncle; or when being chased in a buggy at night by three angry wild elephants, one of which was wounded. The comment on modern methods of warfare made by one of his Gurkha patients is timely: "The Gurkha yields to no man in a hand-to-hand fight, but when a great devil bomb . . . comes out of the sky and kills hundreds of men at once, it is not war!" The book is freely illustrated with good photographs.

NEW PREPARATIONS

"DESIBYL" CAPSULES are described as hermetically sealed capsules containing desiccated whole bile in a readily soluble form. They are intended for use when a natural bile preparation is required either to replace bile lost through fistulæ, as a cholagogue, as a choleretic, or for its bacteriostatic and digestive actions. Each capsule is said to be approximately equivalent to 5 c.cm. of fresh natural bile, and the suggested dose is two or three daily after meals. The makers are Parke, Davis and Co., Beak Street, Regent Street, London, W.1.

STILBŒSTROL AND STILBŒSTROL DIPROPIONATE B.W. AND CO.—Burroughs, Wellcome and Co. (Snow Hill Buildings, E.C.1) now prepare a "Tabloid" stilbœstrol to be taken by mouth and a "Hypoloid" stilbœstrol for intramuscular injection. To medical practitioners wishing to make clinical trials they also issue stilbœstrol dipropionate for oral and intramuscular administration. This compound is still in the experimental stage, but laboratory evidence suggests that it may have a more sustained œstrogenic action than stilbœstrol.

"O DEATH, WHERE IS THY STING?"

C. W. C. writes: An elderly charwoman, in reply to the usual query as to the whereabouts of her trouble, explained that she was really too embarrassed to answer precisely "but if you understand my meaning, doctor, I have something the matter with the termination of Nature."—a terminological inexactitude which, however, sufficiently indicated the seat of the mischief.

1. Attaining Manhood. A Doctor Talks to Boys about Sex. By George W. Corner, M.D., professor of anatomy University of Rochester. London: William Heinemann (Medical Books). 1938. Pp. 67. 5s.

1. Comedy and Drama of a Doctor's Life. By J. L. Dickie. London: Heath Cranton. 1939. Pp. 192. 7s. 6d.